State of South Carolina

Annual Ambient Air Monitoring Network Plan

July 1, 2020 – December 31, 2021

Bureau of Air Quality
South Carolina Department of Health & Environmental Control

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Certification

This document contains the planned changes and final description of the sites and monitors of the South Carolina Ambient Air Monitoring Network (Monitoring Network) for criteria pollutants and related parameters for the eighteen-month period of July 1, 2020 through December 31, 2021. The South Carolina Department of Health and Environmental Control (Department) certifies that the network described herein meets or exceeds the minimum requirements needed to support the State Implementation Plan, national air quality assessments, and policy decisions as required in 40 Code of Federal Regulations (CFR) Part 58, Ambient Air Quality Surveillance, at the time of submittal to the U.S. Environmental Protection Agency (EPA), Region 4. Due to circumstances that may arise during the implementation of the plan from July 1, 2020 through December 31, 2021, some elements of the network may require modification. A notification of modifications will be posted on the Department website and provided to the EPA Region 4 office. Where necessary, a request for approval of deviations from this plan and supporting documentation will be submitted to the EPA Region 4 office.

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Acronyms

AQI – Air Quality Index
AQS – Air Quality System
BAQ – Bureau of Air Quality
CBSA – Core-Based Statistical Area
CFR – Code of Federal Regulation
CO – Carbon Monoxide
CSA – Combined Statistical Area
CBSA – Core Based Statistical Area
CSN – Chemical Speciation Network
CMS – Continuous Monitoring Site
DAQA – Division of Air Quality Analysis
Department – South Carolina Department of Health and Environmental Control
DNPH – Analysis method using 2,4-dinitrophenylhydrazine
EPA – Environmental Protection Agency
FEM – Federal Equivalent Method
FRM – Federal Reference Method
GC/MS – Gas Chromatography / Mass Spectroscopy
GFAA – Graphite Furnace Atomic Absorption Spectrometry
HPLC – High Performance Liquid Chromatography
IC – Ion Chromatography
IMPROVE – Interagency Monitoring of Protected Visual Environments
ICP/MS – Inductively Coupled Plasma Mass Spectroscopy
ID – Site Identification
MET – Meteorology
MOA – Memorandum of Agreement
MSA – Metropolitan Statistical Area
mSA – Micropolitan Statistical Area
$\mu g/m^3$ – Micrograms per cubic meter
NAAQS – National Ambient Air Quality Standards
NATTS – National Air Toxics Trends Site
NCore – National Core Monitoring Network
NO – Nitric oxide
NO_2 – Nitrogen Dioxide
NO_x – Nitrogen Oxides
NO_y – NO_x and other oxidized species
NPAP – National Performance Audit Program
OMB – Office of Management and Budget
PEP – Performance Evaluation Program
$PM_{2.5}$ – Particulate Matter < 2.5 microns
PM_{10} – Particulate Matter < 10 microns
PPB – Parts Per Billion
PPM – Parts Per Million
PSD – Prevention of Significant Deterioration
PTFE – Polytetrafluoroethylene
PUF – Polyurethane Foam
QA – Quality Assurance
QAPP – Quality Assurance Project Plan
QC – Quality Control
SLAMS – State and Local Air Monitoring Station
SO_2 – Sulfur Dioxide
SPM – Special Purpose Monitor
STN – Speciation Trends Network
SVOC – Semi-volatile Organic Compound
TAD – Technical Assistance Document
TEOM – Tapered Element Oscillating Microbalance
TPY – Tons Per Year
TSP – Total Suspended Particulate
UV – Ultraviolet
VOC – Volatile Organic Compound

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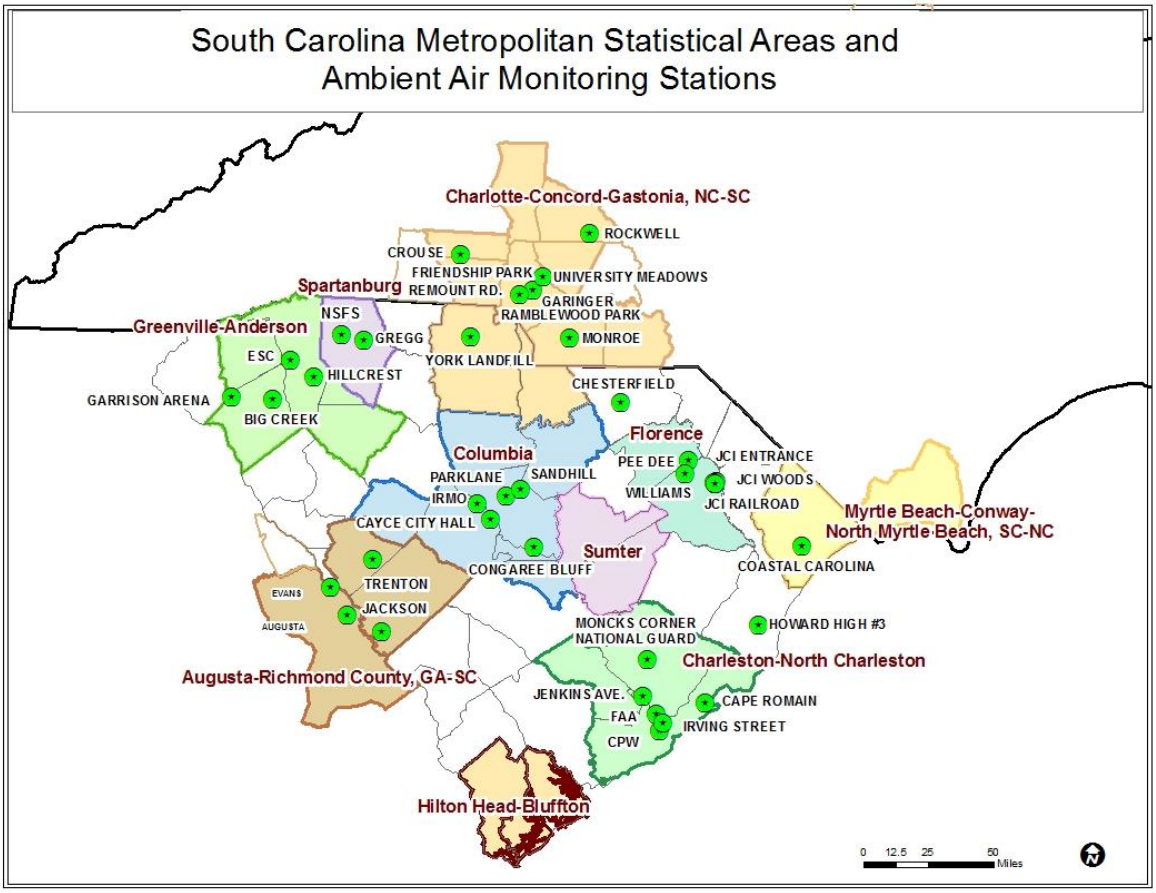
Introduction

The Department or its predecessors have operated an air quality monitoring network in South Carolina since 1959. During that time, the network has continually evolved to meet the requirements and needs of the Department's Air Program and to comply with federal requirements. In 2020-2021, after the new sites are established, the network within South Carolina will be comprised of 77 monitors and samplers at 27 sites.

Map 1: 2020 South Carolina Monitoring Sites



On October 17, 2006, the EPA published revisions to the ambient monitoring regulations (71 FR 61236) requiring quality assurance (QA), monitor designations, minimum requirements for both number and distribution of monitors among metropolitan statistical areas (MSAs), and probe siting changes. The regulations also included the requirement for an annual monitoring network plan and periodic network assessments.

This South Carolina Annual Ambient Air Monitoring Network Plan (Network Plan) covers the eighteen-month period from July 1, 2020 through December 31, 2021. This

period includes a six-month implementation period during which sites indicated as 'New' will be identified, secured, and prepared for the installation of monitoring equipment. It is expected that any monitoring indicated as 'New' or 'Pending' will be installed, calibrated, and begin operating during the July 1, 2020 through December 31, 2021, time period covered by this Network Plan. This Network Plan, as required and described in 40 CFR 58.10, and Periodic Network Assessment, must contain the following information for each monitoring station in the network:

- The Air Quality System (AQS) site identification number (ID) for existing stations,
- Location of each monitoring station, including street address and geographical coordinates,
- The sampling and analysis method used for each measured parameter,
- The operating schedule for each monitor,
- Any proposal to remove or relocate a monitoring station within a period of eighteen months following the network plan submittal,
- The monitoring objective and spatial scale of representativeness for each monitor,
- The identification of any sites that are suitable for comparison against the Particulate Matter < 2.5 microns ($PM_{2.5}$) National Ambient Air Quality Standard (NAAQS), and
- The MSA, Core-Based Statistical Area (CBSA), Combined Statistical Area (CSA), or other area represented by the monitor.

This document constitutes the 2020-2021 South Carolina Annual Ambient Air Monitoring Network Plan. The site pages are organized into two main parts:

- Network Summaries: A table which presents the total number of sites and monitors for the State, including a list of all proposed changes to the current network, and
- Air Monitoring Station Descriptions: An outline of the designations, parameters, monitoring methods, and the purpose for each monitor at the site.

The Monitoring Network is reviewed annually. Planned changes are described in this Network Plan and provided for public review and comment prior to submission to the EPA Region 4 Administrator.

Public Participation Opportunities

In response to public interest and the potential impact of the monitoring regulation changes, the Department's Air Program solicits involvement from both internal (to the Department) and external workgroups. Opportunities for public involvement include:

- A webpage maintained for publication and access to current and draft monitoring plan reference documents and announcements[1].
- The proposed 2020-2021 Network Plan was available for public review and comment from April 24, 2020 through May 25, 2020. All public comments received are summarized and addressed in Appendix F of the final 2020-2021 Network Plan submitted to the EPA.

The Department is committed to continuing the opportunities for input and participation in the development of the annual revisions of the Network Plan and the periodic assessments of the air quality surveillance system.

Network Operation

The primary responsibility for the operation of the Monitoring Network is assigned to the Division of Air Quality Analysis (DAQA) in the Bureau of Environmental Health Services. The DAQA establishes, maintains, and operates the sites and instruments that make up the network and performs the analysis of samples collected as part of routine monitoring or special projects. Data generated by the network for comparison to the NAAQS is verified to be accurate and reported by DAQA to the national AQS database for storage and public access.

Criteria pollutant monitoring for comparison to the NAAQS is performed using the EPA designated Federal Reference Method (FRM) or Federal Equivalent Method (FEM) to ensure the precision and accuracy of the measurements across the air quality surveillance system.

Regular calibration and audits of the measurement systems are performed to verify that the instruments are operating correctly, and data being collected is accurate. All monitors and samplers are calibrated at least once per year. Calibration is also performed whenever the monitor/sampler fails a bi-weekly Quality Control (QC)/precision check or multi-point audit, when maintenance is performed that may affect the monitor response, or if the monitor is located away from the building in which it was calibrated. If possible, a QC/precision check or flow check should precede any maintenance that would affect monitor response.

[1] https://www.scdhec.gov/environment/your-air/ambient-air-monitoring-network

The QA activities supporting the Monitoring Network meet or exceed the QA requirements defined in 40 CFR Part 58, Appendix A (Quality Assurance Requirements for SLAMS and SPM Air Monitoring). Raw data is collected hourly from sites across the state and provided to internal data users (forecasters and data analysts) and to the AIRNow database for presentation to the public. Ozone monitors provide hourly data during Ozone Season (March 1-October 31).

Before the data is submitted to AQS, it is verified to be accurate through review of the instrument QC and QA performance documentation. Instrument QA/QC alone is not sufficient to assure monitoring data quality. In addition to periodic site assessments, the Department conducts additional visits to monitoring sites to document comparisons with applicable siting criteria.

It is the Department's intent that all criteria pollutant monitors and samplers be sited and operated in accordance with the requirements of 40 CFR Part 58. As required in 40 CFR Part 58, Appendix A, the DAQA establishes, maintains, and operates the sites and instruments and performs the analysis of samples collected. Data generated by the network for comparison to the NAAQS is verified to be accurate and reported by the DAQA to the national AQS database for storage and public access. Regular calibration and audits are performed to verify that the instruments are operating correctly, and data being collected is accurate. As required in 40 CFR Part 58, Appendix C, all criteria pollutant monitoring in the Monitoring Network for comparison to the NAAQS is performed using the EPA designated FRM or FEM. Also, all criteria pollutant monitoring in the Monitoring Network meets the monitoring objectives, spatial scales, and design criteria as described in 40 CFR Part 58, Appendix D. Finally, in this document, each site page contains a statement addressing compliance to 40 CFR Part 58, Appendix E for SLAMS monitors. If the site is not in compliance, a plan is presented to address the deficiency. For SPM monitors, the 40 CFR 58.20 states that compliance is optional, but monitoring organizations are encouraged to meet as many of the Appendix E requirements as possible.

An element of the Quality System[2] employed by the DAQA is periodic assessments of systems and monitor performance. As the primary QA organization for ambient air monitoring activities, the DAQA operates under the approved Environmental Quality Control Quality Assurance Management Plan, the Ambient Air Quality Monitoring Quality Assurance Project Plan, and approved plans for specific projects. The EPA Region 4 office may conduct audits of any component of the operation of the network or quality management system. The DAQA also participates in the National

[2] The Quality System is the means by which the Department implements the quality management process through the Quality Assurance Management Plan for SC DHEC, March 2014.

Performance Audit Program (NPAP) and the Performance Evaluation Program (PEP) administered by the EPA to provide independent audits.

Station Description Content

Specific siting information for each site and monitor is stored in the EPA's AQS, the national ambient air database. The AQS Site Description includes the exact location of the site, local and regional population, and description of the site location, monitor types, and monitoring objectives. This site and monitor information are routinely updated whenever there is a change in site characteristics or pollutants monitored. Pictures for each monitoring site can be viewed at: https://gis.dhec.sc.gov/monitors/

The AQS is used as the primary repository for all South Carolina ambient air monitoring information, including site descriptions. All ambient air monitoring data is stored in AQS, including criteria pollutants, non-NAAQS parameters, ambient air toxics, total suspended particulate (TSP), and supporting QA data.

Each network station description contained in this document includes a Site Description and Monitor Details. An explanation of the information in each station description is presented below.

Site Description – The site description includes specific information about each ambient air monitoring site. The site description header includes the following:

1) Site Name – The name that is given to the site.
2) CSA/MSA – The area where the site is located as defined by the United States Census. (September 2018).[3]
3) AQS Site ID – The unique site ID used in AQS is in the form of 45-cc-ssss where:
    a. 45 is the federal identification code for South Carolina,
    b. cc is the county identification code, and
    c. ssss is the site identification code within the county.
4) Location – Typically, the street address of the site, where available.
5) County – County in which the site is located.
6) Coordinates – Latitude (N), then Longitude (W) listed in decimal degrees.
7) Date Established – The date when each existing monitoring station was established is shown in the description. For new stations proposed in this

[3] The US Census Bureau periodically adjusts CBSA names and boundaries. This plan uses the latest available revision.

Monitoring Plan, a date is provided when it is expected for the station to be in operation. Individual monitors at a site may have differing start and stop dates.

8) Site Evaluation (most recent date visited) – Each monitoring station in the network is visited annually to determine whether all required probe exposure criteria for monitors are met. If necessary, corrective action is scheduled to address deficiencies. If a new monitoring site has not yet been evaluated, it will be denoted with the word "PENDING".

Monitor Details – Each station description has a table that lists the parameter(s) and the descriptive information associated with that particular parameter. An explanation of the information in the tables is presented below.

1) Parameter – The chemicals that are being measured. These may be criteria pollutants (compounds for which a NAAQS has been established), non-criteria pollutants, and/or supporting information (primarily meteorological measurements) measured at the site.
2) Scale – Each monitor or sampler in the monitoring network is described in terms of the approximate physical dimensions of the air parcel nearest the monitoring station throughout which pollutant concentrations are expected to be reasonably similar. This is most often referred to as the "Scale" of the monitor. Different pollutants monitored at the same location may represent different scales depending on the characteristics of the pollutant. Area dimensions or scales of representativeness used in the network description are:
    a. Microscale – Air volumes associated with area dimensions ranging from several meters up to about 100 meters.
    b. Middle scale – Areas up to several city blocks in size with dimensions ranging from approximately 100 meters to 0.5 kilometers.
    c. Neighborhood scale – Extended areas of a city that have relatively uniform land use with dimensions ranging from 0.5 to 4.0 kilometers.
    d. Urban scale – Citywide or equivalent rural areas with dimensions ranging from 4 to 50 kilometers.
    e. Regional scale – Areas ranging from 50 to hundreds of kilometers in diameter.

    The true representative area may best be described by an irregular shape of the approximate dimensions indicated above to account for local sources, topography, and differing land use.

The representative scale of a monitor is closely associated with the monitoring objective.

3) Objective – The ambient air monitoring network is designed to meet three primary objectives:

    a. Provide air pollution data to the public in a timely manner. Near real-time data is made available on the internet through AIRNow and Air Quality Index (AQI) reporting and forecasting in the major metropolitan areas.

    b. Support compliance with ambient air quality standards and emissions strategy development. Monitors are operated to measure concentrations for comparison to NAAQS and to provide information to aid in the development of strategies to improve air quality.

    c. Support air pollution research studies. Data from the monitoring network support greater understanding of the impacts and effects of ambient air pollution.

Individual monitors within a monitoring network that support these basic objectives generally serve one or more of the following purposes:

i. Determine highest concentrations of pollutants,

ii. Determine representative concentrations in areas of high population density,

iii. Determine impact on air quality of significant sources or source categories,

iv. Determine general background concentrations,

v. Determine extent of regional pollutant transport, and

vi. Determine welfare-related impacts in more rural and remote areas (ex. visibility impairment and impacts to vegetation).

The design intent in siting stations is to correctly match the area represented by the sample of monitored air with the scale most appropriate to meet the monitoring objective of the monitor. The relationship of appropriate scale to the six basic purposes is as follows:

Monitoring Purpose	**Siting Scale**
Highest concentration	Micro, Middle, Neighborhood

Monitoring Purpose	Siting Scale
Population exposure	Neighborhood, Urban
Source impact	Micro, Middle, Neighborhood
General/background	Neighborhood, Urban, Regional
Regional transport	Urban, Regional
Welfare-related impacts	Urban, Regional

Monitor and sampler data is regularly reviewed to assure the assigned scale is correct and appropriate for the intended objective.

4) Designation – Monitor designations that may be found in the tables include the State and Local Air Monitoring Station (SLAMS), special purpose monitor (SPM), National Core Monitoring Network (NCore), non-regulatory, QA collocated, and IMPROVE monitoring. Definitions of these designations are:

    a. SLAMS – Monitors for which NAAQS have been established. These stations must meet requirements that relate to four major areas: QA/QC, monitoring methodology, sampling interval, and siting of instruments and instrument probes.

    b. SPM – Monitors which support investigations addressing complaints, areas and pollutants of concern, network refinement, modeling verification, and compliance. These monitors are committed to investigation and projects as described in the associated Quality Assurance Project Plan (QAPP). They may be located as separate monitoring stations or be included at existing monitoring locations. The SPM may also monitor for air toxics, particulate, criteria pollutants, precipitation, and meteorology. Supplemental speciation is a type of SPM monitor that operates according to Chemical Speciation Network (CSN) protocols but is not contained in the STN Network. This monitoring data is reported to AQS by the University of California - Davis. Although siting and probe exposure will conform to all requirements for SLAMS monitors whenever possible, the 40 CFR Part 58.20 states that compliance for SPM monitors is optional.

    c. NCore – NCore is a national multi-pollutant network that utilizes advanced measurement systems for particles, pollutant gases, and meteorology. It provides data for long-term trends of criteria and non-

criteria pollutants, and supports air quality model evaluation, scientific studies, and ecosystem assessments. Most NCore monitors are SLAMS.

d. Non-regulatory Monitor – A monitor that measures data on a pollutant that will not be used for regulatory purposes.

e. Collocated QA/QC Sampler – A particulate matter sampler that is paired with but operated independent of a similar sampler. It is used to indicate measurement precision.

f. IMPROVE – The Interagency Monitoring of Protected Visual Environments (IMPROVE) network collects visibility related data. These monitors are operated in the State of South Carolina in cooperation with the federal government, and are listed in the Site Description, but are not included in the Site Tables.

The SLAMS and SPM data may be used in the reporting of an area's AQI. The AQI is a method of reporting that converts concentration levels of pollution to a simple number scale of 0-500. Index reporting is required for all urban areas with a population exceeding 350,000. Intervals on the AQI scale are related to potential health effects of the daily measured concentration of the measured pollutants. All stations in a metropolitan area provide data for daily index reporting. Data from continuous ozone and $PM_{2.5}$ monitors is collected hourly and reported as AQI maps on the EPA's AIRNow website. A daily AQI is provided for the areas in and around Aiken, Charleston, Columbia, Florence/Darlington, Greenville-Spartanburg, Myrtle Beach, and York/Chester/Lancaster.

5) Probe Height – The monitor or sampler probe is the point where ambient air enters the analytical or sample collection system. Ideally, air would be sampled approximately at nose height, but due to operational, exposure, and security considerations, air may be sampled further from ground level. Proper probe height is specified in the monitoring regulations (typically between 2 and 15 meters) and is checked as part of the periodic site evaluations.

6) Analysis Methods – All sampling and analytical procedures used to determine ambient concentrations of criteria pollutants for comparison to the NAAQS will use either FRM or FEM. For the reactive gases, borosilicate glass or FEP Teflon are used in the sampling train.

   Where appropriate for specific monitoring objectives, well characterized, non-equivalent methods may be used. The analysis method for the parameters most commonly measured and listed in the station descriptions are described below.

a) Particulate Matter less than 10 microns (PM_{10}) – PM_{10} samplers operated by the Department are designated as either FRM or FEM and are operated consistent with the requirements in 40 CFR Part 50, Appendix J and 40 CFR Part 58. The PM_{10} samplers located at the Chesterfield Site are used for the NATTS metals at Chesterfield.

   Continuous PM_{10} monitors provide 24-hour concentration measurements every day. During sampling, ambient air passes through an inlet designed to pass only particles smaller than 10 microns in diameter. The flow rate, critical to precise particle size separation, is monitored and controlled constantly. Particulate in the sample stream is collected on a Teflon-coated glass fiber filter. The mass collected on the filter is also continuously monitored. The difference between the current filter weight and the previous weight gives the total mass of the collected particulate for that period. The mass concentration is calculated by dividing the mass gained by the flow through the filter for the period. The concentration measurements are averaged over 1-hour and 24-hour periods. Data is stored locally on redundant data acquisition systems and recovered hourly by a central office computer system (AirVision). Only 24-hour daily averages are used for comparison to the ambient standards.

b) Particulate Matter less than 2.5 microns ($PM_{2.5}$) – All $PM_{2.5}$ samplers operated by the Department for comparison to the NAAQS are designated FRM samplers. Manual samplers are operated consistent with the requirements in 40 CFR Part 50, Appendix L. Samples are collected on 46.2-millimeter polytetrafluoroethylene (PTFE) filters over a 24-hour sampling period. Air flow through the filter is maintained at 16.7 liters per minute at local ambient temperature and pressure. The flow rate must be maintained within ±5 percent throughout the sample period. Sample filters are collected within 177 hours of the end of the sample run and are kept cooled during transit to minimize potential sample loss.

   The PTFE filters are equilibrated before each weighing for a minimum of 24 hours at a mean temperature between 20°C and 23°C and 30 to 40 percent mean relative humidity. Filters are weighed before and after the sample period. Filters are used within thirty days of initial weighing. Collected samples are typically weighed within two weeks of sampling. If the samples are maintained below 4°C after collection, they can be held for up to thirty days from the end of the sample period. The mass collected and the volume sampled are used to calculate the concentration, expressed in $\mu g/m^3$.

Unless designated a FEM, continuous $PM_{2.5}$ monitors do not provide concentration data suitable for comparison to the NAAQS. Non-FEM continuous monitors that provide reasonably comparable measurements may be used to provide data for calculation of an area AQI. Continuous $PM_{2.5}$ samplers provide 24-hour concentration measurements every day. During sampling, ambient air passes through an inlet system designed to pass only particles smaller than 2.5 microns in diameter. The flow rate, critical to precise particle size separation, is monitored and controlled constantly. Particulate in the sample stream is collected on a Teflon-coated glass fiber filter. The mass collected on the filter is also continuously monitored. The difference between the current filter weight and the previous weight gives the total mass of the collected particulate for that period. The mass concentration is calculated by dividing the mass gained by the flow through the filter for the period. The concentration measurements are averaged over 1-hour and 24-hour periods. Data is stored locally on redundant data acquisition systems and recovered hourly by a central office computer system (AirVision). Only 24-hour daily averages from FEM monitors are used for comparison to the ambient standards.

c) $PM_{2.5}$ Speciation sampling – In addition to operating $PM_{2.5}$ samplers that provide measurement of only the $PM_{2.5}$ mass concentration, the Department also operates a $PM_{2.5}$ Speciation sampler to collect samples for analysis to determine the chemical makeup of the particulate. Speciation sample collections are part of the national CSN. Samples are collected on a set of two cartridges on the Met-One SASS sampler for nitrates, sulfates, and metals and on a single cartridge in the URG 3000N sampler for carbon containing material. The samples are collected over a 24-hour sampling period. The individual cartridges contain denuders and filters designed to efficiently capture the major components of $PM_{2.5}$.

   After collection, the samples are shipped cold to an EPA contract laboratory for analysis. At the laboratory, the samples are analyzed using thermal optical analysis (for carbon), ion chromatography (IC) for nitrates and sulfates, and x-ray fluorescence for metals to determine the presence and concentration of specific compounds. Sample results are available on the EPA website.

d) Sulfur Dioxide (SO_2) – Instruments used to continuously monitor SO_2 concentrations in the atmosphere use the Ultraviolet (UV) Fluorescence Federal Reference Method. The continuous data output from the

instrument is stored locally on redundant data acquisition systems and recovered hourly by central office computer system (AirVision).

Calibration of these instruments and audits of their performance are done using the EPA protocol gas mixtures containing a certified concentration of SO_2 in nitrogen. This gas is diluted to provide known concentrations of SO_2. These known concentrations are supplied to the instrument, which is adjusted so the instrument output corresponds with the specific concentrations.

e) Carbon Monoxide (CO) – Continuous monitoring for CO is performed using the FRM non-dispersive infrared correlation method. Data is stored locally on redundant data acquisition systems and recovered hourly by the DAQA central office computer system (AirVision).

Calibration of the instrument and audits of its performance are done using the EPA Protocol gas mixtures containing a certified concentration of CO in air. The gas is diluted to provide known concentrations of CO. Known concentrations are supplied to the instrument, which is adjusted so the instrument output corresponds with the specific concentrations.

Ozone – Ozone is monitored using the FEM UV photometry method. The continuous data output from the instrument is stored locally on redundant data acquisition systems and recovered hourly by the central office computer system (AirVision). Monitors are routinely calibrated, and their performance audited using portable ozone transfer standards.

Nitrogen Dioxide (NO_2) – The FRM UV chemiluminescence method is used for measurement of NO_2 concentration in the ambient air. The continuous data output from the instrument is stored locally on redundant data acquisition systems and recovered hourly by a central office computer system (AirVision).

Calibration of the instrument and audits of their performance are done using the EPA protocol gas mixtures containing a known concentration of Nitric Oxide (NO) and Nitrogen Oxides (NO_X) in nitrogen. The gas is diluted to present several known concentrations of the oxides. A converter is used to convert NO_2 to NO for reaction with internally generated ozone and measurement of the light produced by the reaction of NO and ozone. Known concentrations are supplied to the instrument, which is adjusted so the instrument output corresponds with the supplied concentrations.

f) Lead – Lead concentrations are determined by the analysis of TSP collected using high volume particulate samplers as described in 40 CFR Part 50,

Appendix G. Particulate samples are extracted in accordance with IO-3.1 and analyzed by Inductively Coupled Plasma Mass Spectroscopy (ICP/MS) using IO-3.5. The analysis also follows any additional NATTS requirements.

g) Meteorology – Meteorology consists of wind direction, wind speed, precipitation, temperature, and pressure. Collection and/or analysis methods are discussed below.

   a. Wind Direction and Speed – Wind data is collected using systems that incorporate high precision 'Air Quality' systems. The systems use separate or combined wind vanes and anemometers mounted 10 meters above ground. The systems provide supporting information about the local meteorology.

   b. Precipitation – Precipitation is measured by tipping bucket gauges that provide a signal indicating the occurrence, rate, and amount of precipitation. The gauges are not heated, so they may not accurately provide the time and rate for frozen precipitation events. The monitors are checked periodically for operation and accuracy using a known volume of water and compared with actual volumes of collected precipitation where there are collocated samplers.

   c. Ambient Temperature and Pressure – Ambient temperature is available from sensors that are part of the sampling systems for the FRM $PM_{2.5}$ samplers. Ambient temperature measurement is necessary for the systems to maintain the required flow rate used to reproducibly separate the desired particulate size fractions as conditions change. Although the primary use of the measurement is for sampler flow control, the sensors are accurate and regularly audited. Temperature and pressure sensors are compared to reference systems at least once per month.

h) Volatile Organic Compounds – Volatile organic compounds (VOCs) are collected into passivated or silica lined stainless steel canisters. The canisters are cleaned, tested, and evacuated at the laboratory prior to installation at the sampling site. At the sampling location, the canisters are filled and pressurized with ambient air throughout the sampling period (typically 24 hours). Measured portions of the captured air are concentrated at low temperature and analyzed using gas chromatography with a mass spectrometer detector (GC/MS) to identify and quantitate target compounds. The collection and analysis method are based on the EPA Method TO-15 and the NATTS Technical Assistance Document (TAD).

i) Semi-volatile Organic Compounds – Semi-volatile organic compounds (SVOCs) are collected using polyurethane foam (PUF) and a solid adsorbent to trap the compounds from air pulled through the material by a high-volume sampler. The SVOCs are extracted from the collection cartridge using a solvent, and the rinses are concentrated for analysis. Measured portions of the extract are analyzed using GC/MS to identify and quantitate the collected compounds. The collection and analysis method are based on the EPA Method TO-13 and the NATTS TAD.

j) Carbonyls – Carbonyls (including aldehydes and ketones) are extracted from ambient air by reaction with a compound that stabilizes them enough to capture and hold. The reaction of the target compounds with Dinitrophenylhydrazine (DNPH) removes them from the sampled air and concentrates them in the sample cartridge. Solvent extraction of the DNPH derivatives from the cartridge is followed by analysis using High Pressure Liquid Chromatograph to identify and quantitate the collected Carbonyls. The collection and analysis method are based on the EPA Method TO-11 and the NATTS TAD.

k) Metals – Metals in particulate are collected on filters using the TSP or PM_{10} High Volume samplers. Metals are extracted from a portion of the filter using sonication in an acid solution. Detection, identification, and quantitation of the target metals inductively coupled plasma with a mass spectrometer (ICP/MS). The collection and analysis method are based on the EPA Method IO-3.1, IO-3.5, and the NATTS TAD.

l) Precipitation Chemistry – A portion of the precipitation sample collected each week is analyzed for pH and conductivity. To determine concentrations of dissolved material that contributes to acid rain, the collected material is analyzed for cations and anions using ion chromatography (IC).

7) Sampling frequency – Sampling frequency indicates how often a measurement is made. Sampling typically involves collection of a sample over a period (typically 24 hours, midnight to midnight EST) and the delivery of the sample to the laboratory for preparation and analysis. Samples are collected every day (1:1), every third day (1:3), every sixth day (1:6), every twelfth day (1:12), or weekly, depending on the data quality objectives of the project. Results are reported as averages for the sample period. The EPA publishes the

1:3 and 1:6 day sampling schedules used by the South Carolina Ambient Air Monitoring Network and nationwide[4].

8) Monitoring – Monitoring typically uses on-site analyzers that continuously sample the air and measure the pollutant of interest. Results of the analysis are reported as hourly averages. Five-minute averages are also reported for SO_2 concentrations. One-minute averages are collected from many of the continuously monitored parameters for use in verification and validation of the reported monitoring data.

[4] http://www.epa.gov/ttn/amtic/calendar.html

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July 1, 2020 through December 31, 2021 Network Summary

This summary table presents the elements of the 2020-2021 Monitoring Plan.

	Network Summary: Calendar Year July 1, 2020 through December 31, 2021 Air Monitoring Stations and Monitors																
Region	Sites	$PM_{2.5}$	$PM_{2.5}$ Cont.	Speciation	PM_{10}	Lead	Ozone	SO_2	NO_2/NO/NO_y	CO	Metals	Carbonyls	SVOC	VOC	Precip. Chem.	Precipitation	MET
Augusta-Richmond County, GA-SC MSA	2	1	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0
Charleston-N. Charleston MSA	5	2	3	0	1	0	2	2	3	0	0	0	0	0	0	1	1
Charlotte-Concord-Gastonia, NC-SC MSA	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
Columbia MSA	5	3	2	1	1	0	3	1	2	1	0	0	1	0	2	2	1
Florence MSA	5	1	1	0	0	*7	1	0	0	0	0	0	0	0	0	0	0
Greenville-Anderson MSA	4	3	1	0	1	0	3	1	1	0	0	0	0	0	0	0	0
Myrtle Beach-Conway-North Myrtle Beach, SC-NC MSA	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Spartanburg MSA	2	2	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Remainder of State	2	1	1	0	0	0	1	0	0	0	2	2	2	2	0	1	0
TOTALS	27	13	10	1	3	7	15	5	6	1	2	2	3	2	2	4	2

*In order to maximize resources, alternate lead samplers are run on different days (See Site pages for specific information).

2018 Criteria Pollutant Design Values

This section presents the 2018 certified design values for the South Carolina criteria pollutant monitoring network.

Site ID	County	Site Name	Ozone (ppm)	$PM_{2.5}$ Annual ($\mu g/m^3$)	$PM_{2.5}$ 24-hour ($\mu g/m^3$)	PM_{10} (# Expect-ed Exceed-ances)	SO_2 1-hour (ppb)	NO_2 1-hour (ppb)	NO_2 Annual (ppb)	CO 8-hour (ppm)	CO 1-hour (ppm)	Lead ($\mu g/m^3$)
003-0003	Aiken	Jackson Middle School	0.062									
007-0005	Anderson	Big Creek	0.057									
015-0002	Berkeley	Bushy Park	0.058									
019-0003	Charleston	Jenkins Avenue				0	13	*35	*7			
019-0046	Charleston	Cape Romain	0.061				4	*10	1			
019-0048	Charleston	FAA		7.2	16							
019-0049	Charleston	Charleston Public Works		7.2	15							
025-0001	Chesterfield	Chesterfield	0.062	*6.9	*14	0						
029-0002	Colleton	Ashton	0.056									
031-0003	Darlington	Pee Dee	0.060									
037-0001	Edgefield	Trenton	0.060	8.2	19							
041-0003	Florence	Williams		*7.8	*17							

Site ID	County	Site Name	Ozone (ppm)	$PM_{2.5}$ Annual ($\mu g/m^3$)	$PM_{2.5}$ 24-hour ($\mu g/m^3$)	PM_{10} (# Expect-ed Exceed-ances)	SO_2 1-hour (ppb)	NO_2 1-hour (ppb)	NO_2 Annual (ppb)	CO 8-hour (ppm)	CO 1-hour (ppm)	Lead ($\mu g/m^3$)
041-8001	Florence	JCI Railroad										*0.05
041-8002	Florence	JCI Entrance										*0.08
041-8003	Florence	JCI River										*0.03
043-0011	Georgetown	Howard #3				0						
045-0015	Greenville	Greenville ESC		8.3	23	0	2	41	8			
045-0016	Greenville	Hillcrest	0.062	7.9	17							
063-0008	Lexington	Irmo		8.5	19		*3					
063-0010	Lexington	Cayce City Hall				0						
073-0001	Oconee	Long Creek	0.063	*6.0	*14		2					
077-0002	Pickens	Clemson	0.062									
077-0003	Pickens	Wolf Creek	0.062									
079-0007	Richland	Parklane	0.061	7.8	16	*	2			1	1	*0
079-0021	Richland	Congaree Bluff	0.055				3					
079-1001	Richland	Sandhill	0.064					*37	*4			

Site ID	County	Site Name	Ozone (ppm)	$PM_{2.5}$ Annual ($\mu g/m^3$)	$PM_{2.5}$ 24-hour ($\mu g/m^3$)	PM_{10} (# Expect-ed Exceed-ances)	SO_2 1-hour (ppb)	NO_2 1-hour (ppb)	NO_2 Annual (ppb)	CO 8-hour (ppm)	CO 1-hour (ppm)	Lead ($\mu g/m^3$)
083-0009	Spartanburg	North Spartan-burg	0.065									
083-0011	Spartanburg	T.K. Gregg		8.0	16							
* denotes design values that did not meet data completeness requirements.												

2019 Criteria Pollutant Design Values

This section presents the 2019 design values for the South Carolina criteria pollutant monitoring network. This data will be certified in May 2020.

Site ID	County	Site Name	Ozone (ppm)	$PM_{2.5}$ Annual ($\mu g/m^3$)	$PM_{2.5}$ 24-hour ($\mu g/m^3$)	PM_{10} (# Expect-ed Exceed-ances)	SO_2 1-hour (ppb)	NO_2 1-hour (ppb)	NO_2 Annual (ppb)	CO 8-hour (ppm)	CO 1-hour (ppm)	Lead ($\mu g/m^3$)
003-0003	Aiken	Jackson Middle School	0.063									
007-0005	Anderson	Big Creek	0.058									
015-0002	Berkeley	Bushy Park	*0.060									
019-0003	Charleston	Jenkins Avenue				0	15	*36	*6			

Site ID	County	Site Name	Ozone (ppm)	$PM_{2.5}$ Annual ($\mu g/m^3$)	$PM_{2.5}$ 24-hour ($\mu g/m^3$)	PM_{10} (# Expect-ed Exceed-ances)	SO_2 1-hour (ppb)	NO_2 1-hour (ppb)	NO_2 Annual (ppb)	CO 8-hour (ppm)	CO 1-hour (ppm)	Lead ($\mu g/m^3$)
019-0046	Charleston	Cape Romain	0.062				4	*9	*1			
019-0048	Charleston	FAA		7.0	15							
019-0049	Charleston	Charleston Public Works		7.1	15							
025-0001	Chesterfield	Chesterfield	0.063	*7.0	*14	0						
031-0003	Darlington	Pee Dee	0.061									
037-0001	Edgefield	Trenton	*0.061	7.7	16							
041-0003	Florence	Williams		*7.7	*17							
041-8001	Florence	JCI Railroad										*0.05
041-8002	Florence	JCI Entrance										*0.09
041-8003	Florence	JCI River										*0.07
043-0011	Georgetown	Howard #3				0						

Site ID	County	Site Name	Ozone (ppm)	$PM_{2.5}$ Annual ($\mu g/m^3$)	$PM_{2.5}$ 24-hour ($\mu g/m^3$)	PM_{10} (# Expect-ed Exceed-ances)	SO_2 1-hour (ppb)	NO_2 1-hour (ppb)	NO_2 Annual (ppb)	CO 8-hour (ppm)	CO 1-hour (ppm)	Lead ($\mu g/m^3$)
045-0015	Greenville	Greenville ESC		7.8	18	0	1	40	8			
045-0016	Greenville	Hillcrest	0.063	7.6	16							
051-0008	Horry	Coastal Carolina	0.060									
063-0008	Lexington	Irmo		7.7	17		2					
063-0010	Lexington	Cayce City Hall				0						
073-0001	Oconee	Long Creek	0.060	*5.8	*14		1					
077-0002	Pickens	Clemson	0.063									
077-0003	Pickens	Wolf Creek	0.062									
079-0007	Richland	Parklane	0.061	7.6	14	*	2			1	1	
079-0021	Richland	Congaree Bluff	0.055				3					
079-1001	Richland	Sandhill	0.063					*34	3			

Site ID	County	Site Name	Ozone (ppm)	$PM_{2.5}$ Annual ($\mu g/m^3$)	$PM_{2.5}$ 24-hour ($\mu g/m^3$)	PM_{10} (# Expect-ed Exceed-ances)	SO_2 1-hour (ppb)	NO_2 1-hour (ppb)	NO_2 Annual (ppb)	CO 8-hour (ppm)	CO 1-hour (ppm)	Lead ($\mu g/m^3$)
083-0009	Spartanburg	North Spartan-burg	0.064									
083-0011	Spartanburg	T.K. Gregg		7.7	15							
091-0008	York	York Landfill	0.067									
* denotes design values that did not meet data completeness requirements.												

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Required Monitoring

The EPA regulation 40 CFR Part 58 requires that each state maintain a minimum number of monitors to properly characterize air quality and to meet any required objectives of the monitoring network[5]. In general, these minimum requirements are based on the MSA population and current ambient air monitoring design values. The following sections discuss the minimum monitoring criteria from 40 CFR Part 58, Appendix D for each of the criteria pollutants (ozone, particulate matter ($PM_{2.5}$ and PM_{10}), lead, SO_2, NO_2, and CO), the CBSAs, and the MSA population. The final section shows the current South Carolina minimum monitoring requirements.

Minimum Monitoring for Ozone – The ozone minimum monitoring criteria has two requirements:

1) Required Ozone SLAMS sites – A minimum number of required ozone SLAMS sites for each CBSA that is determined by CBSA population and the peak ozone concentrations.
2) NCore Requirement – Each NCore site must include an ozone monitor. The Parklane (45-079-0007) Site in Columbia, South Carolina is the NCore site for South Carolina.

Minimum Monitoring for $PM_{2.5}$ – The $PM_{2.5}$ minimum monitoring criteria has six requirements:

1) Required $PM_{2.5}$ SLAMS sites – A minimum number of required $PM_{2.5}$ SLAMS sites for each CBSA.
2) Continuous Requirement – A continuous $PM_{2.5}$ monitoring requirement which is equal to at least one-half (round up) the minimum required $PM_{2.5}$ SLAMS sites. Also, at least one required continuous analyzer in each CBSA must be collocated with one of the required FRM or FEM monitors, unless at least one of the required FRM/FEM monitors is itself a continuous FEM monitor, in which case, no collocation requirement applies.
3) Regional Background and Transport – At least one $PM_{2.5}$ site must be established in each state to monitor for regional background and at least one $PM_{2.5}$ site to monitor regional transport. The Cape Romain (45-019-0046) Site in Charleston County is the regional background site and the Chesterfield (45-025-0001) Site in Chesterfield County is the regional transport site.
4) NCore Requirement – Each state is required to operate at least one NCore site which measures $PM_{2.5}$ using both continuous and integrated/filter-based

[5] 40 CFR 58.11 paragraph (a)(3)(c) and Appendix D to 40 CFR Part 58.

samplers. The Parklane (45-079-0007) Site in Columbia, South Carolina is the NCore site for South Carolina.

5) Near-road $PM_{2.5}$ Monitoring – The EPA required the collocation of one $PM_{2.5}$ monitor with a near-road NO_2 monitor in urban areas having populations of 1,000,000 or more by January 1, 2017. The Charlotte-Concord-Gastonia, NC-SC MSA is the only MSA in South Carolina that met the population requirement for a collocated $PM_{2.5}$ monitor. The near-road monitoring requirement for the Charlotte-Concord-Gastonia, NC-SC MSA is being fulfilled at the Remount Road (37-119-0045) Site by the Mecklenburg County Air Quality Commission

6) Speciation Monitoring – Chemical speciation monitoring is conducted at the Parklane (45-079-0007) Site and is funded as part of the $PM_{2.5}$ Speciation Trends Network (STN).

Minimum Monitoring for PM_{10} – The PM_{10} minimum monitoring criteria has one requirement that is based on the CBSA population, the number of exceedances of the NAAQS, and the percentage of PM_{10} concentrations over or under the NAAQS. Unlike other criteria pollutants, the minimum monitoring requirement for PM_{10} is given as a range of required monitoring sites for a CBSA.

Minimum Monitoring for Lead – The lead minimum monitoring criteria has one requirement that any facility with annual lead emissions exceeding 0.5 tpy will be required to have a lead sampler. Based on the state-submitted 2014 National Emissions Inventory, there are no facilities in South Carolina with lead emissions greater than 0.5 tpy.

On May 7, 2010, the Department issued an air synthetic minor construction permit to Johnson Controls Battery Group for the Florence Recycling Center (Permit No. 1040-0129-CA). The company has since changed its name to Clarios, LLC. Under a settlement agreement[6] with several petitioners, the Florence Recycling Center supports source-oriented ambient lead monitoring being conducted by the Department at several sites around the facility. Additional details of the monitoring of this facility can be found in the Florence MSA section of this Monitoring Plan under the Site name "Johnson Controls."

Minimum Monitoring for SO_2 – The SO_2 minimum monitoring criteria has three requirements:

[6] https://www.scdhec.gov/sites/default/files/docs/HomeAndEnvironment/Docs/JCI/JCI-Settlement%20Agreement_07142010.pdf

1) Requirement for Monitoring by the Population Weighted Emissions Index – The population weighted emissions index (PWEI) is determined using the most current population of each CBSA and the most recent level of SO_2 emissions for each county within the CBSA. The emissions data is available from the National Emissions Inventory. For any CBSA with a calculated PWEI value equal to or greater than 1,000,000, a minimum of three SO_2 monitors are required. For any CBSA with a calculated PWEI value equal to or greater than 100,000, but less than 1,000,000, a minimum of two SO_2 monitors are required. For any CBSA with a calculated PWEI value equal to or greater than 5,000, but less than 100,000, a minimum of one SO_2 monitor is required.

   The following table presents each CBSA's 2019 population, 2014 SO_2 emissions, calculated index, and minimum monitoring requirements. The process for calculating the index can be found at the bottom of the table.

CBSA	2019 CBSA Population	2014 CBSA SO_2 Emissions (Tons)	PWEI	SO_2 Minimum Monitors Required
*Charlotte-Concord-Gastonia, NC-SC MSA	2,636,883	7,624	20,104	1
Greenville-Anderson MSA	920,477	2,928	2,695	0
Columbia MSA	838,433	17,769	14,898	1
Charleston-North Charleston MSA	802,122	15,784	12,661	1
*Augusta-Richmond County, GA-SC MSA	608,980	3,353	2,042	0
*Myrtle Beach-Conway-North Myrtle Beach, SC-NC MSA	496,901	4,837	2,404	0
Spartanburg MSA	319,785	386	123	0
Hilton Head Island-Bluffton MSA	222,195	1,164	259	0
Florence MSA	204,911	3,982	816	0
Sumter MSA	140,466	191	27	0

The PWEI is calculated using US Census population data and state emission inventory data at the CBSA level. The population for each CBSA (based on the most recent US Census or Census estimate) is multiplied by the CBSA total SO_2 emissions (reported in tons using the latest National Emissions Inventory data). This product is divided by 1,000,000 to derive the index. CBSA with index greater than 1,000,000 will require 3 monitors. CBSA with index less than 1,000,000 but greater than 100,000 will require 2 monitors. CBSA with index less than 100,000 but greater than 5,000 will require 1 monitor. CBSA with index less than 5,000 will require no monitors.

*Monitors may be operated in the non-South Carolina portion of the CBSA.

2) Regional Administrator Required Monitoring – The Regional Administrator may require additional SO_2 monitoring sites above the minimum number of monitors required by the PWEI in areas that have the potential to have high SO_2 concentrations, in areas impacted by sources which are not conducive to modeling, or in locations with susceptible and vulnerable populations that are not otherwise being monitored. South Carolina does not have any SO_2 Regional Administrator Required Monitoring.

3) NCore Requirement – Each NCore site must include a SO_2 monitor. The Parklane (45-079-0007) Site in Columbia, South Carolina is the NCore site for South Carolina.

Minimum Monitoring for NO_2 – The NO_2 minimum monitoring criteria has four requirements:

1) Near-road NO_2 Monitors – Each state must have one microscale near-road NO_2 monitoring site in each CBSA with a population of at least 1,000,000 or more persons. An additional near-road NO_2 monitoring site is required for any CBSA with a population of 2,500,000 or more, or in any CBSA with a population of 1,000,000 or more that has one or more roadway segments with 250,000 or greater Annual Average Daily Traffic (AADT) counts. The Charlotte-Gastonia-Concord NC-SC MSA meets the population requirement of at least 2,500,000 or more persons. The first near-road site is the Remount Road Site. It is located in Charlotte, North Carolina. The second near-road site is commented on by North Carolina in the 2019-2020 Annual Monitoring Network Plan-Mecklenburg County Air Quality document. On page 22, it states the following:

> "In the EPA response to the 2018-2019 Network Plan, EPA recognized that establishing a new near-road monitoring site is a resource intensive and time-consuming process. EPA also acknowledged that the availability of resources to establish a new near-road NO_2 site are limited and are not currently available. EPA stated it would "…work with MCAQ over the next couple of years to determine the optimal location and timing for establishing another near-road NO_2 site in the Charlotte area. Additionally, the EPA will provide funding for the initial establishment of a new near-road site in the area…" MCAQ will work with the EPA to determine the optimal location and timing

for establishment of an additional near-road NO_2 site in Mecklenburg County. As of the submission date of the 2019-2020 Monitoring Plan, EPA has not provided funding for operations, maintenance, equipment or capital expenditures in support of the operation of an additional near-road NO_2 monitoring station. As soon as practical and after EPA provided funding for implementation becomes available, MCAQ will work to install and operate an additional near-road NO_2 monitoring station in the MCAQ monitoring network."

2) Requirements for Area-wide NO_2 Monitoring – Each state must have one monitoring site in each CBSA with a population of 1,000,000 or more persons which will monitor a location of expected highest NO_2 concentrations representing the neighborhood or larger spatial scales. The Garinger High School (37-119-0041) Site in Charlotte, North Carolina also operates an area wide NO_2 monitor.

3) Regional Administrator Required Monitoring – The Regional Administrators, in collaboration with states, require a minimum of forty additional NO_2 monitoring sites above the minimum monitoring requirements (nationwide) in any area, with a primary focus on siting these monitors in locations to protect susceptible and vulnerable populations. The Greenville ESC (45-045-0015) Site is a Regional Administrator Required Monitoring site.

4) NCore Requirement (NO/NO_y Monitoring) – Each NCore site must include a NO/NO_y monitor that will collect data to be used to produce conservative estimates for NO_2 and further ozone research. The Parklane (45-079-0007) Site in Columbia, South Carolina is the NCore site for South Carolina.

Minimum Monitoring for CO – The CO minimum monitoring criteria has two requirements:

1) Near-road CO Monitors – Each state with CBSAs having a population of 1,000,000 or more people must have one CO monitor collocated with one required near-road NO_2 monitor to be operational by January 1, 2017. The Charlotte-Concord-Gastonia, NC-SC MSA is the only CBSA in South Carolina that meets the population requirement for a collocated CO monitor. The Mecklenburg County Air Quality office operates a CO monitor at the Remount Road (37-119-0045) near-road Site in Charlotte, North Carolina that became operational on January 1, 2017.

2) NCore Requirement – Each NCore site in a CBSA with a population of 500,000 or more must include a CO monitor. The Parklane (45-079-0007) Site in the Columbia, SC MSA is the NCore site for South Carolina and supports one CO monitor. The Garinger (37-119-0041) Site in Mecklenburg County is also an NCore site and supports a CO monitor.

Minimum Monitoring for the Photochemical Assessment Monitoring Stations (PAMS) – South Carolina is not subject to the PAMS requirement.

The CBSAs and the Minimum Monitoring Requirements – The term CBSA is a collective term for the defined MSAs and Micropolitan Statistical Areas (mSA). An MSA area contains a core urban area of 50,000 or more population, and a mSA contains an urban core of at least 10,000 but less than 50,000 population. Each metropolitan or micropolitan area consists of one or more counties and includes the counties containing the core urban area, as well as any adjacent counties that have a high degree of social and economic integration (as measured by commuting to work) with the urban core[7].

An MSA or mSA geographic composition, or list of geographic components at a particular point in time, is referred to as its "delineation". The MSA or mSA are delineated by the U.S. Office of Management and Budget (OMB) and are the result of the application of published standards based on Census Bureau data. The standards for delineating the areas are reviewed and revised once every ten years, prior to each decennial census. Generally, the areas are delineated using the most recent set of standards following each decennial census. Between censuses, the delineations are updated annually to reflect the most recent Census Bureau population estimates. Areas based on the 2010 standards and Census Bureau data were delineated in September 2018[8,9]. Minimum monitoring requirements only apply to MSAs.

While the Department understands the need for establishing minimum monitoring requirements, the EPA appropriately has mechanisms within the network plan approval and network assessment process to allow states the flexibility to implement a monitoring network that meets the three basic monitoring objectives and addresses National and State needs. The recent changes in the MSA definitions are an example of the reasons for the incorporation of flexibility in the regulations

[7] https://www.census.gov/programs-surveys/metro-micro.html
[8] https://www.census.gov/programs-surveys/metro-micro.html
[9] OMB Bulletin No. 18-04-"Revised Delineations of Metropolitan Statistical Areas, Micropolitan Statistical Areas, and Combined Statistical Areas, and Guidance on Uses of the Delineations of These Areas", September 14, 2018.

and illustrates the necessity that the EPA use the discretion available in the monitoring regulations to afford states flexibility and regulatory certainty.

Per 40 CFR Part 58, Appendix D, paragraph 2(e), minimum monitoring requirements in multi-state MSAs can be met through a cooperative agreement.
In the absence of an agreement between states, the minimum monitoring requirements must be met independently in each portion of the MSA.

Map 2: 2020 South Carolina Metropolitan Statistical Areas

South Carolina has established a memorandum of agreement (MOA) with the Georgia Department of Natural Resources, Environmental Protection Division[10], North Carolina Department of Environmental and Natural Resources Division of Air Quality, and Mecklenburg County, North Carolina[11,12] which specifies the responsibilities of each party to develop a monitoring network that meets the appropriate monitoring objectives for the MSA.

Population and the Minimum Monitoring Requirements – The minimum monitoring criteria only applies to MSAs. The table below presents the latest 2019* population estimates for each MSA in South Carolina and the total population of MSAs shared with North Carolina and Georgia.

MSA	2019 Population
Charlotte-Concord-Gastonia, NC-SC MSA	2,636,883
Greenville-Anderson MSA	920,477
Columbia MSA	838,433
Charleston-North Charleston MSA	802,122
Augusta-Richmond County, GA-SC MSA	608,980
Myrtle Beach-Conway-North Myrtle Beach, SC-NC MSA	496,901
Spartanburg MSA	319,785
Hilton Head Island-Bluffton MSA	222,195
Florence MSA	204,911
Sumter MSA	140,466
*United States Census Bureau and CFR 40 Part 58, Appendix D	

South Carolina Minimum Monitoring Requirements – Federal minimum monitoring requirements are based on the *latest available United States Census population estimates and the 2019 ambient air quality design values (page 22).

[10] The Memorandum of Agreement on Air Quality Monitoring for Criteria Pollutants for the Augusta-Richmond County Metropolitan Statistical Area (MSA) was signed on March 6, 2017 by the South Carolina DHEC Bureau of Air Quality and the Georgia Environmental Protection Division-Air Protection Branch.

[11] The Memorandum of Agreement on Air Quality Monitoring for Criteria Pollutants for the Myrtle Beach-Conway-North Myrtle Beach, SC-NC Metropolitan Statistical Area (MSA) was signed on July 1, 2015 by the South Carolina DHEC Bureau of Air Quality and the North Carolina Department of Environmental and Natural Resources-Division of Air Quality.

[12] The Memorandum of Agreement on Air Quality Monitoring for Criteria Pollutants for the Charlotte-Gastonia-Concord Metropolitan Statistical Area (MSA) was signed on July 1, 2016 by the South Carolina DHEC Bureau of Air Quality, the North Carolina Department of Environmental and Natural Resources-Division of Air Quality and the Mecklenburg County, North Carolina Land Use and Environmental Service Agency-Air Quality.

Based on this information, the minimum monitoring requirements for each MSA are:

MSA	Ozone	$PM_{2.5}$	$PM_{2.5}$ Cont.	PM_{10}	Lead	SO_2	$NO/NO_y/NO_2$	CO
**Augusta-Richmond County, GA-SC MSA	2	1	1	1-2	0	0	0	0
Charleston-North Charleston, MSA	2	1	1	1-2	0	1	0	0
**Charlotte-Concord-Gastonia, NC-SC MSA	2	2	1	2-4	0	1	4***	2
Columbia MSA (NCore)	2	1	1	1-2	0	1	1	1
Florence MSA	1	0	0	0	0	0	0	0
Greenville-Anderson MSA	2	1	1	1-2	0	0	1	0
Hilton Head Island-Bluffton MSA	0	0	0	0	0	0	0	0
Myrtle Beach-Conway-North Myrtle Beach, SC-NC MSA	2	0	0	0-1	0	0	0	0
Spartanburg MSA	1	0	0	0-1	0	0	0	0
Sumter MSA	0	0	0	0	0	0	0	0

*United States Census Bureau population estimates and CFR 40 Part 58, Appendix D.
**Minimum ambient air monitoring requirements are met cooperatively with the States of Georgia and North Carolina.
***Charlotte MSA is required to have two near-road monitors, one area-wide monitor and an NOy at the NCore site.

Summary of Changes for July 1, 2020 through December 31, 2021

Any planned changes in parameters monitored, the configuration, or operations at the site planned for 2020-2021 are described herein and summarized in the Summary of July 1, 2020 through December 31, 2021 Network Changes. Unless otherwise indicated, changes at a site including the beginning of new monitoring activity will be effective on or before January 1, 2021. Ozone monitoring for 2020 and 2021 at new or special project sites may start at the beginning of the Ozone Monitoring Season (March 1-October 31).

Augusta-Richmond County, GA-SC MSA (South Carolina portion includes Aiken and Edgefield Counties)

No changes planned.

Charleston-North Charleston MSA

Moncks Corner National Guard (45-015-1002) Site – This Site is a replacement site for the Bushy Park (45-015-0002) Site. It began monitoring for ozone on March 2, 2020.

FAA (45-019-0048) Site – After the North Charleston Fire Station (45-019-0020) Site is established, this Site will operate concurrently with the North Charleston Fire Station (45-019-0020) Site for one year, then $PM_{2.5}$ monitoring will be discontinued.

CPW (45-019-0049) Site – After the North Charleston Fire Station (45-019-0020) Site is established, this Site will be discontinued.

NCFS (45-019-0020) Site – Once this Site is established, the collocated $PM_{2.5}$ that was temporarily relocated from the Charleston MSA to the T.K. Gregg (45-083-0011) Site will be relocated to the North Charleston Fire Station (45-019-0020) Site.

Irving Street (45-019-0021) Site – This site is in expected to be operational by June 2020.

Charlotte-Concord-Gastonia, NC-SC MSA

No changes planned.

Columbia MSA

State Hospital (45-079-0029) Site – All monitoring at this Site was discontinued on December 19, 2019.

Irmo (45-063-0008) Site – The SO_2 monitoring was discontinued on April 22, 2020.

Florence MSA

No changes planned.

Greenville-Anderson MSA

Big Creek (45-007-0005) Site – This Site will run concurrently with the Garrison Arena Site for the 2020 Ozone Monitoring Season. Afterward, the Department will evaluate the data and determine if this site is redundant.

Garrison Arena (45-007-0006) Site – This Site became operational on March 2, 2020. This site serves as a replacement for the Clemson (45-077-0002) Site.

Clemson (45-077-0002) Site – Monitoring at this site was discontinued on November 5, 2019, and the Site will be shut down.

Wolf Creek (45-077-0003) Site – Monitoring at this Site was discontinued on November 15, 2019. The site will be closed.

Hilton Head Island-Bluffton MSA

No changes planned.

Myrtle Beach-Conway-North Myrtle Beach SC-NC MSA

Coastal Carolina (45-051-0008) Site – The Coastal Carolina Monitoring Site collected its first complete ozone design value in 2019. Its design value for 2017-2019 is at 86 percent of the NAAQS, requiring the MSA to have a second ozone monitor according to Appendix D of 40 CFR Part 58. Since this design value is the first complete design value for the monitor and the 2019 design value is so close to the 85% threshold the Department and the State of North Carolina are working with EPA Region 4 to determine the appropriate ozone monitoring for this MSA and may wait to see what the 2020 design value is before taking action to add a second ozone monitor to the MSA.

Spartanburg MSA

T.K. Gregg (45-083-0011) Site – After the North Charleston Fire Station (45-019-0020) Site is established, the collocated $PM_{2.5}$ monitor at the T.K. Gregg (45-083-0011) Site will be relocated to the North Charleston Fire Station (45-019-0020) Site.

Sumter MSA

No changes planned.

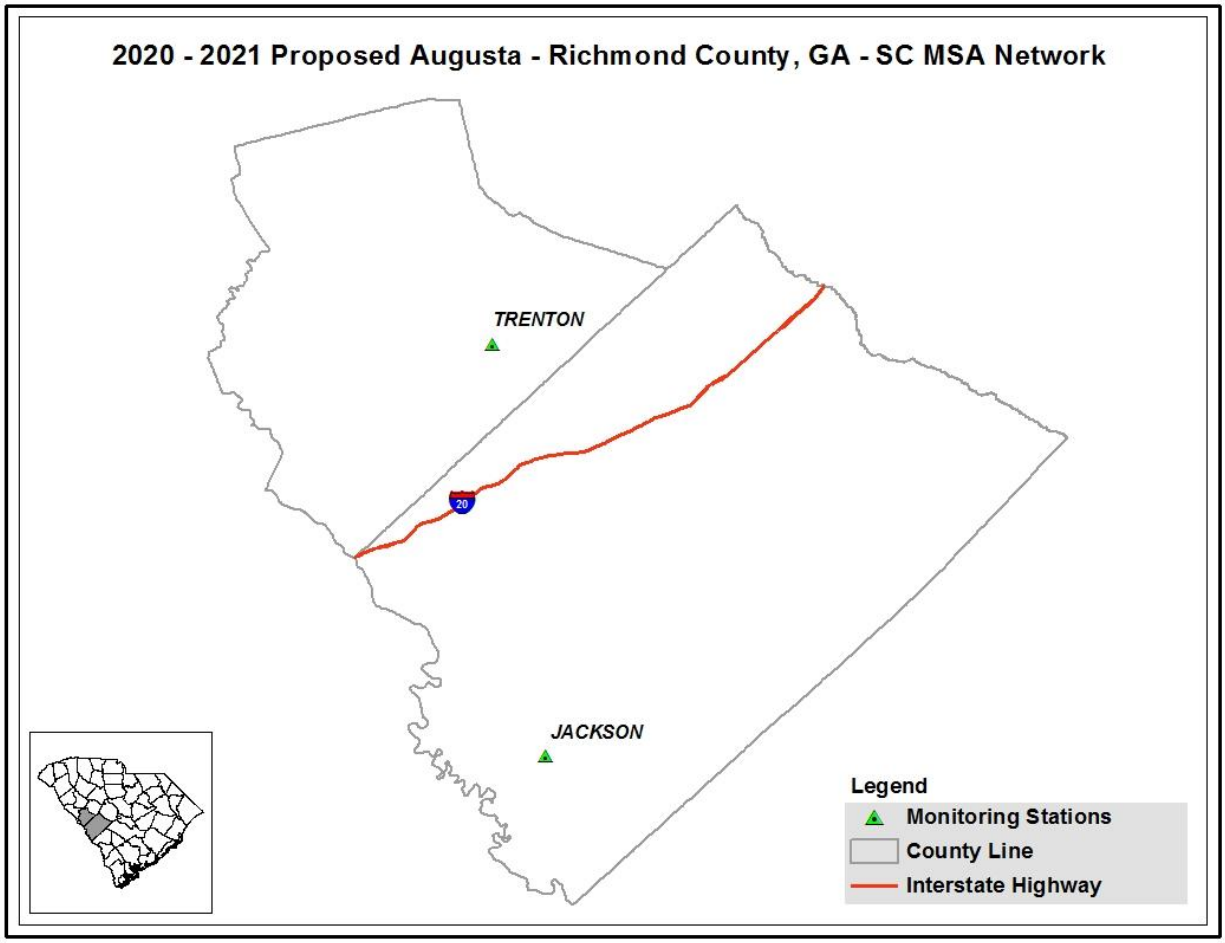
Remainder of State

Howard High #3 (45-043-0011) Site – The Department has determined that this Site will be maintained and will operate on a rotating schedule. The PM_{10} monitor was discontinued on April 3, 2019. It will resume monitoring on January 1, 2021.

Long Creek (45-073-0001) Site – This site will be closed. SO_2 monitoring was discontinued on January 22, 2020, continuous $PM_{2.5}$ was discontinued on December 4, 2019, precipitation monitoring was discontinued on January 22, 2020, and ozone monitoring was discontinued on November 6, 2019. After the Department evaluates the options, the SO_2 monitor will be moved to a suitable Site.

Site Descriptions

Augusta-Richmond County, GA-SC MSA (part)



Classification of Monitoring Type by Site

Site ID	Site Name	$PM_{2.5}$	$PM_{2.5}$ Cont.	Speciation	PM_{10}	Lead	Ozone	SO_2	NO_2	CO
45-003-0003	Jackson Middle School						●			
45-037-0001	Trenton	O	O				●			
TOTAL		1	1	0	0	0	2	0	0	0
O SPM / Other ● SLAMS ●●/OO duplicate / QA monitors										

Jackson Middle School

CSA/MSA: none/Augusta-Richmond County MSA
AQS Site ID: 45-003-0003
Location: 8217 Atomic Road, Jackson
County: Aiken
Coordinates: +33.34219, -81.78872
Date Established: October 24, 1985
Site Evaluation: February 26, 2020

The Jackson Middle School Site is located in southwestern Aiken County, within the town limits of Jackson at the Jackson Middle School. Jackson is located in a suburban setting to monitor ozone concentrations upwind of the Augusta urbanized area. The sample inlet is 128 meters from the nearest road.

This site meets siting criteria found in 40 CFR Part 58 Appendix E. The northeast tree does not meet the requirements for tree height in the 40 CFR Part 58 Appendix E, Section 4 (Spacing from Obstructions), but there is still more than 270° unobstructed air flow around the probe.

Changes for 2020-2021:
There are no changes planned for 2020-2021.

Monitors:

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
Ozone 44201-2	Urban	Upwind Background	SLAMS	3.35	Ultraviolet Absorption (087)	Continuous

Trenton

CSA/MSA: none/Augusta-Richmond County MSA
AQS Site ID: 45-037-0001
Location: 660 Woodyard Road (Hwy 121)
County: Edgefield
Coordinates: +33.73993, -81.85362
Date Established: March 28, 1980
Site Evaluation: February 26, 2020

The Trenton Site is located in southeastern Edgefield County. Trenton was originally established to monitor for ozone crossing into South Carolina from Georgia. The Trenton Site monitors for ozone and $PM_{2.5}$. The $PM_{2.5}$ monitors are the required FRM $PM_{2.5}$ sampler and continuous FEM $PM_{2.5}$. The sample inlets are 30 meters from the nearest road.

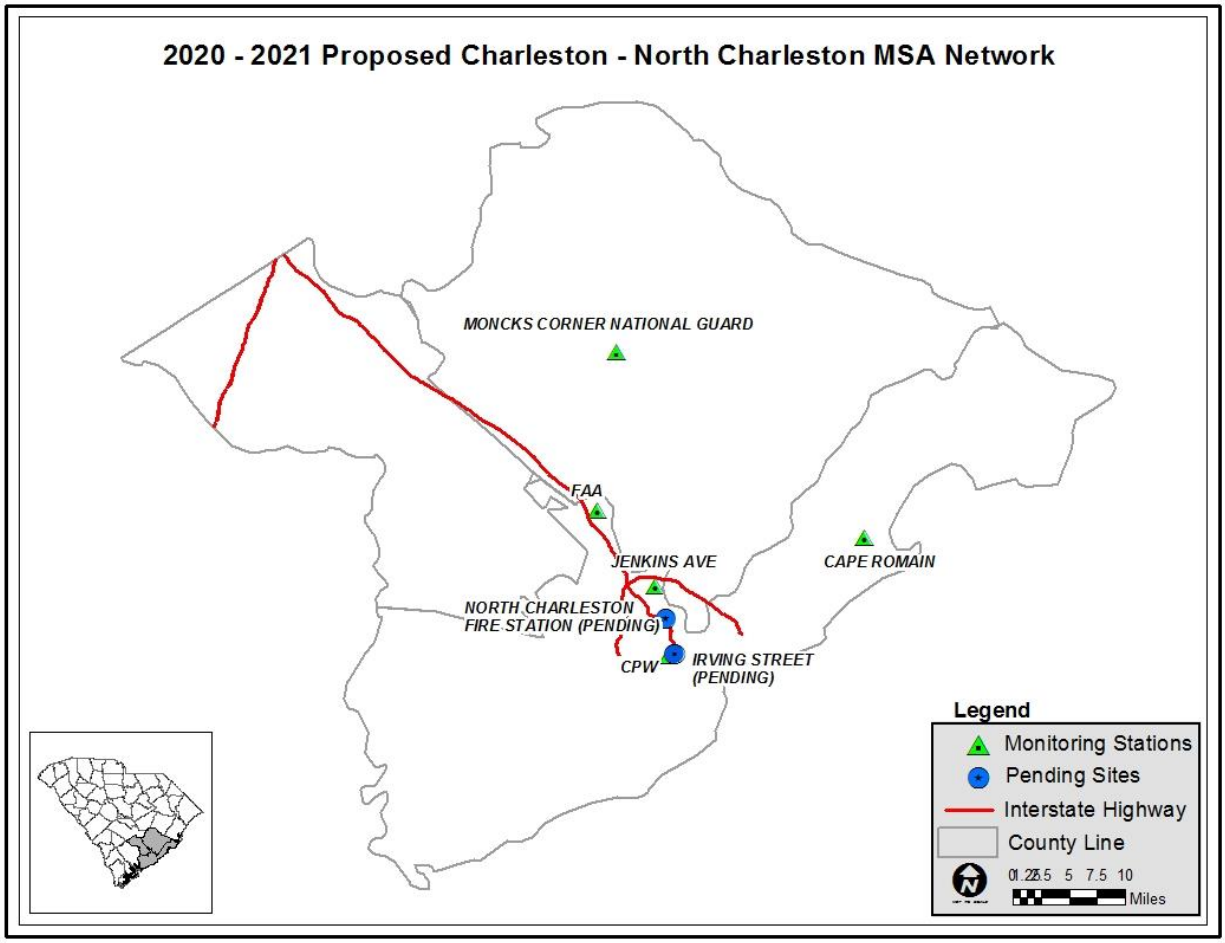
This Site meets all 40 CFR Part 58, Appendix E requirements.

Changes for 2020-2021:
There are no changes planned for 2020-2021.

Monitors:

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
$PM_{2.5}$ 88101-1	Urban	Extreme Downwind	SPM	4.72	FRM Gravimetric w/ VSCC (145)	1:3
Continuous $PM_{2.5}$ 88502-3	Urban	Extreme Downwind	SPM	4.57	TEOM Gravimetric (702)	Continuous
Ozone 44201-1	Urban	Maximum Ozone Concentration / Extreme Downwind	SLAMS	3.45	Ultraviolet Absorption (087)	Continuous

Charleston-North Charleston MSA



Classification of Monitoring Type by Site

Site ID	Site Name	$PM_{2.5}$	$PM_{2.5}$ Cont.	Speciation	PM_{10}	Lead	Ozone	SO_2	NO_2	CO	Precip.	MET
45-015-1002	Moncks Corner National Guard						●					
45-019-0003	Jenkins Ave. Fire Station				●			●	○			
45-019-0020	North Charleston Fire Station-PENDING	● ●	○									
45-019-0021	Irving Street		○					○	○			
45-019-0046	Cape Romain		●				●	○	○		○	●

Site ID	Site Name	$PM_{2.5}$	$PM_{2.5}$ Cont.	Speciation	PM_{10}	Lead	Ozone	SO_2	NO_2	CO	Precip.	MET
45-019-0048	FAA	O										
45-019-0049	CPW	●	O									
TOTAL		2	2	0	1	0	2	2	2	0	1	1
O SPM / Other ● SLAMS ●●/OO duplicate / QA monitors ●/O Pending												

Moncks Corner National Guard

CSA/MSA: none/Charleston-North Charleston MSA
AQS Site ID: 45-015-1002
Location: Airport Drive and Wal Flo Lane
County: Berkeley
Coordinates: 33.18, -80.03
Date Established: March 2, 2020
Site Evaluation: PENDING

The Moncks Corner National Guard Site is located in Moncks Corner downwind from the Charleston urban area. It is a replacement for the Bushy Park Site. This Site monitors for ozone with a monitoring objective of maximum ozone concentration. The sample inlet is ~177 meters from the nearest road.

This Site will meet 40 CFR Part 58, Appendix E requirements.

Changes for 2020-2021:
There are no changes planned for 2020-2021.

Monitors:

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
Ozone 44201-1	Urban	Max Ozone Concentration	SLAMS		Ultraviolet Absorption (087)	Continuous

Jenkins Ave. Fire Station

CSA/MSA: none/Charleston-North Charleston MSA
AQS Site ID: 45-019-0003
Location: 4830 Jenkins Ave.
County: Charleston
Coordinates: +32.88228, -79.97755
Date Established: February 14, 1969
Site Evaluation: January 29, 2020

The Jenkins Ave. Fire Station Site is located in the city of North Charleston behind a fire station in an urban and central city setting. The Jenkins Ave. Fire Station Site supports monitors for PM_{10}, SO_2, and NO_2. The sample inlets are 33.5 meters from the nearest road.

This Site meets all 40 CFR Part 58, Appendix E requirements.

Changes for 2020-2021:
There are no changes planned for 2020-2021.

Monitors:

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
PM_{10} 81102-3	Neighbor-hood	Highest Concentration	SLAMS	4.10	TEOM-Gravimetric (079)	Continuous
Sulfur Dioxide 42401-1	Neighbor-hood	Population Exposure	SLAMS	4.68	Pulsed Fluorescent (560)	Continuous
Nitrogen Dioxide 42602-2	Neighbor-hood	Highest Concentration Source Oriented	SPM	4.68	Chemilumi-nescence (599)	Continuous

North Charleston Fire Station (NCFS)

CSA/MSA: none/Charleston-North Charleston MSA
AQS Site ID: 45-019-0020
Location: 2800 Carner Avenue
County: Charleston
Coordinates: 32.84, -79.96
Date Established: PENDING
Site Evaluation: PENDING

The North Charleston Fire Station (NCFS) Site will be located in the central portion of the Charleston peninsula on the grounds of the North Charleston Fire Station #3. This Site was selected for its heavy exposure to population and industry and is a replacement for the FAA Beacon and the Charleston Public Works (CPW) Sites $PM_{2.5}$ monitoring locations. This Site will support collocated $PM_{2.5}$ intermittent samplers and a continuous $PM_{2.5}$ monitor.

This Site will meet siting criteria found in 40 CFR Part 58 Appendix E.

Changes for 2020-2021:
This Site is PENDING.

Monitors:

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
$PM_{2.5}$ 88101-1	Neighbor-hood	Population Exposure	SLAMS		FRM Gravimetric w/ VSCC (145)	1:3
Collocated $PM_{2.5}$ 88101-2	Neighbor-hood	Population Exposure	QA Collocated SLAMS		FRM Gravimetric w/ VSCC (145)	1:3
$PM_{2.5}$ 88502-3	Neighbor-hood	Population Exposure	SPM		TEOM Gravimetric (704)	Continuous

Irving Street

CSA/MSA: none/Charleston-North Charleston MSA
AQS Site ID: 45-019-0021
Location: Irving Avenue
County: Charleston
Coordinates: 32.83, -79.95
Date Established: June 11, 2020
Site Evaluation: PENDING

The Irving Street Site is being established in cooperation with the Port Authority. The Site will be located in the "neck" of Charleston in the proximity of the Port expansion. The Site will exist for approximately 2 years as dictated by the MOA. This Site will support SO_2, NO_2, and continuous $PM_{2.5}$ monitors.

This Site will meet siting criteria found in 40 CFR Part 58 Appendix E.

Changes for 2020-2021:
This Site is PENDING.

Monitors:

Parameter	Scale	Objective	Designa-tion	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
Sulfur Dioxide 42401-1	Neighbor-hood	Background/ Population Exposure	SPM		Pulsed fluorescent (560)	Continuous
Nitrogen Dioxide 42602-1	Neighbor-hood	Background/ Population Exposure	SPM		Chemilumi-nescence (599)	Continuous
$PM_{2.5}$ 88502-3	Neighbor-hood	Population Exposure	SPM		TEOM Gravimetric (704)	Continuous

Cape Romain

CSA/MSA: none/Charleston-North Charleston MSA
AQS Site ID: 45-019-0046
Location: 390 Bulls Island Road (Awendaw)
County: Charleston
Coordinates: +32.94101, -79.65719
Date Established: July 11, 1983
Site Evaluation: January 15, 2020

The Cape Romain Site is located in Charleston County at the Cape Romain National Wildlife Refuge (NWR) near Moore's Landing. The Cape Romain NWR is a Class I area about 20 miles northeast of Charleston. The majority of the Refuge area is offshore, extending from Bull Island 20 miles northeast to Cape Romain. The Refuge is bordered on the west by the Intracoastal Waterway. Inland are large tracts of forests with scattered residences. Several miles inland, a primary coastal route, US Highway (Hwy) 17, parallels the coast, with some development along the section of highway that is closest to the Refuge.

The Cape Romain Site has continuous monitors for ozone, SO_2, NO_2, $PM_{2.5}$, and meteorological parameters. Additionally, this Site serves as a required regional background for $PM_{2.5}$. The sample inlets are 86 meters from the nearest road. This site has been designated as a two-year rotational site for SO_2. The SO_2 monitor is scheduled to operate from 2020 through 2021.

This Site meets all 40 CFR Part 58, Appendix E requirements.

Changes for 2020-2021:
There are no changes planned for 2020-2021.

Monitors:
(Table continues on next page)

Parameter	Scale	Objective	Desig-nation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
$PM_{2.5}$ 88502-3	Regional	General / Background	SLAMS	4.75	FDMS w/ SCC (183)	Continuous
Ozone 44201-1	Regional	General / Background	SLAMS	4.10	Ultraviolet (047)	Continuous

Parameter	Scale	Objective	Desig-nation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
Sulfur Dioxide 42401-2	Regional	Source Oriented	SPM	4.10	Pulsed Fluorescent (560)	Continuous
Nitrogen Dioxide 42602-1	Regional	General / Background	SPM	4.10	Chemilumine-scence (599)	Continuous
Wind Speed, Wind Direction and Precipita-tion	Neighbor-hood	Local Conditions	SLAMS	10.0	Instruments for wind speed, direction, and precipitation (020)	Continuous

FAA Beacon

CSA/MSA: none/Charleston-North Charleston MSA
AQS Site ID: 45-019-0048
Location: 2670 Elms Plantation Blvd
County: Charleston
Coordinates: +32.98024, -80.06502
Date Established: April 9, 1999
Site Evaluation: January 23, 2020

The Charleston FAA Beacon Site is located in Charleston County approximately five miles northwest of the Charleston International Airport near Charleston Southern University. This Site has a SPM $PM_{2.5}$ FRM sampler. The sample inlet is 160 meters from the nearest road.

Although the 40 CFR 58.20 states that compliance to the siting regulations is optional, it is the Department's intent to meet as many of the Appendix E requirements as possible. This Site does not meet 40 CFR Part 58 Appendix E, Section 4, Section 5 and Section 11 for site obstructions due to trees and drip line requirements.

Changes for 2020-2021:
The Department is planning to consolidate the FAA and CPW $PM_{2.5}$ Sites into the NCFS Monitoring Site. The collocated $PM_{2.5}$ was temporarily moved to the T. K. Gregg Monitoring Site in 2018 to meet State minimum monitoring requirements. When the NCFS is established, the $PM_{2.5}$ sampler will be moved back to the Charleston-North Charleston MSA. The FAA Site will run concurrently for one year after the NCFS Site is established.

Monitors:

Parameter	Scale	Objective	Designa-tion	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
$PM_{2.5}$ 88101-1	Neighbor-hood	Population Exposure	SPM	2.35	FRM Gravimetric w/ VSCC (145)	1:1

Charleston Public Works (CPW)

CSA/MSA: none/Charleston-North Charleston MSA
AQS Site ID: 45-019-0049
Location: 360 Fishburne Street
County: Charleston
Coordinates: +32.79097, -79.95871
Date Established: November 20, 1998
Site Evaluation: January 23, 2020

The Charleston Public Works (CPW) Site is located on the western side of the Charleston peninsula near downtown Charleston. The CPW Site supports the required continuous $PM_{2.5}$ sampler and the intermittent $PM_{2.5}$ FRM monitor for the MSA. The sample inlets are 24.8 meters from the nearest road.

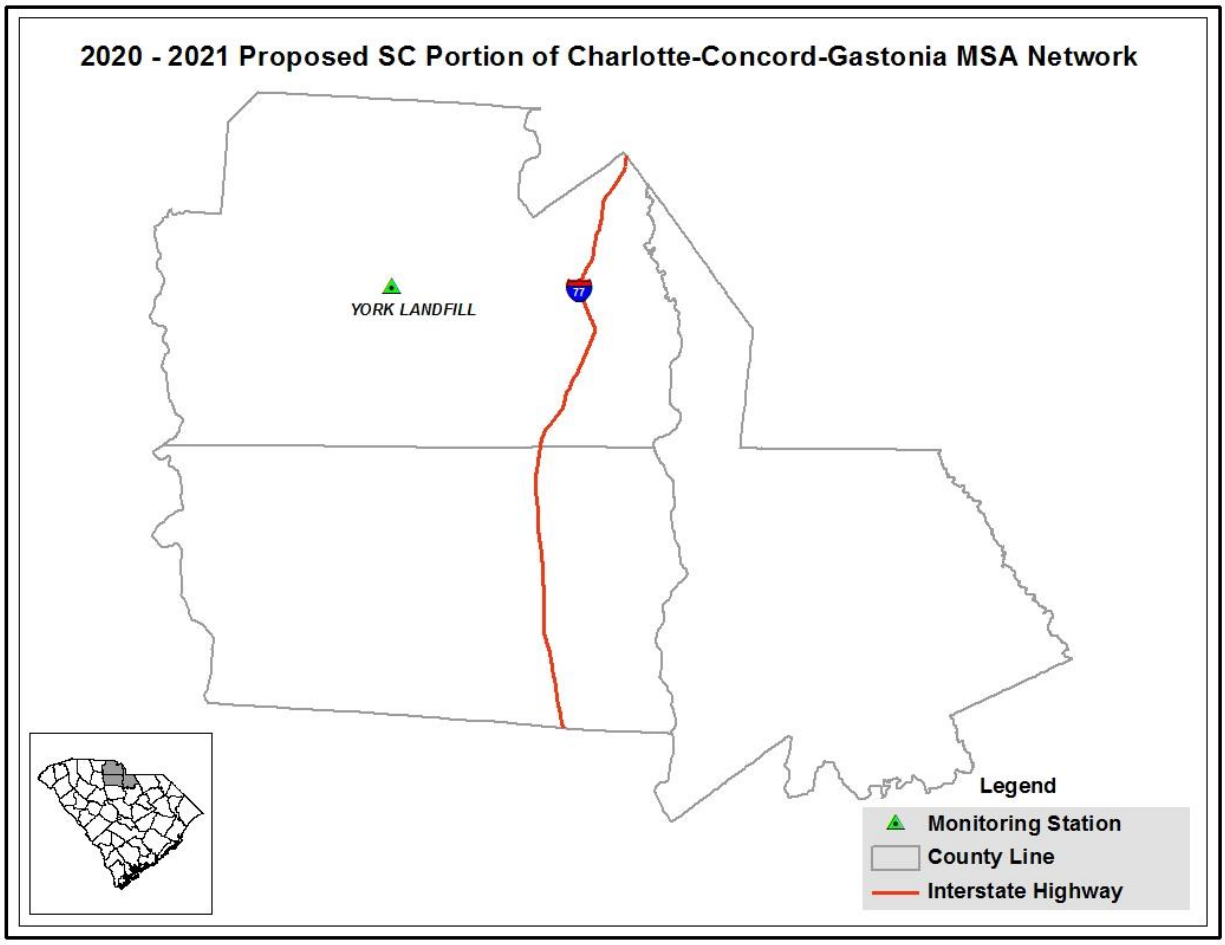
This Site does not meet 40 CFR Part 58 Appendix E, Section 4, Section 5, and Section 11 for site obstructions due to trees and drip line requirements. The northeast tree does not meet the requirements for tree height or drip line in the 40 CFR Part 58 Appendix E, but there is still more than 270° unobstructed air flow around the probe. $PM_{2.5}$ monitoring at this Site will be discontinued when the NCFS Site is operational.

Changes for 2020-2021:
The Department is planning to consolidate the FAA and CPW Sites into the NCFS Site. The FAA Site will run concurrently for one year after the NCFS Site is established.

Monitors:

Parameter	Scale	Objective	Designa-tion	Probe Height (m)	Analysis Method & (Method Code)	Sampling Frequency
$PM_{2.5}$ 88101-1	Neighbor-hood	Population Exposure	SLAMS	2.25	FRM Gravimetric w/ VSCC (145)	1:1
$PM_{2.5}$ 88502-3	Neighbor-hood	Population Exposure	SPM	2.83	TEOM Gravimetric (702)	Continuous

Charlotte-Concord-Gastonia MSA



Classification of Monitoring Type by Site

Site ID	Site Name	$PM_{2.5}$	$PM_{2.5}$ Cont.	Speciation	PM_{10}	Lead	Ozone	SO_2	NO_2	CO	MET
45-091-0008	York Landfill						●	O			
TOTAL		0	0	0	0	0	1	1	0	0	0
O SPM / Other ● SLAMS ●●/OO duplicate / QA monitors											

York Landfill

CSA/MSA: Charlotte-Concord CSA / Charlotte-Concord-Gastonia MSA
AQS Site ID: 45-091-0008
Location: 310 Langrum Branch Rd.
County: York
Coordinates: +34.9776, -81.2074
Date Established: February 27, 2017
Site Evaluation: February 28, 2019

The York Landfill site is located in south central York County in a rural setting. This site was established to replace the York Continuous Monitoring Site (45-091-0006) and represents background levels near the Charlotte urban area. The York Landfill Site currently operates monitors for ozone and sulfur dioxide. This site has been designated as a two-year rotational site for SO_2. The SO_2 monitor is scheduled to operate from 2020 through 2021. The sample inlets are 34.8 meters from the nearest road.

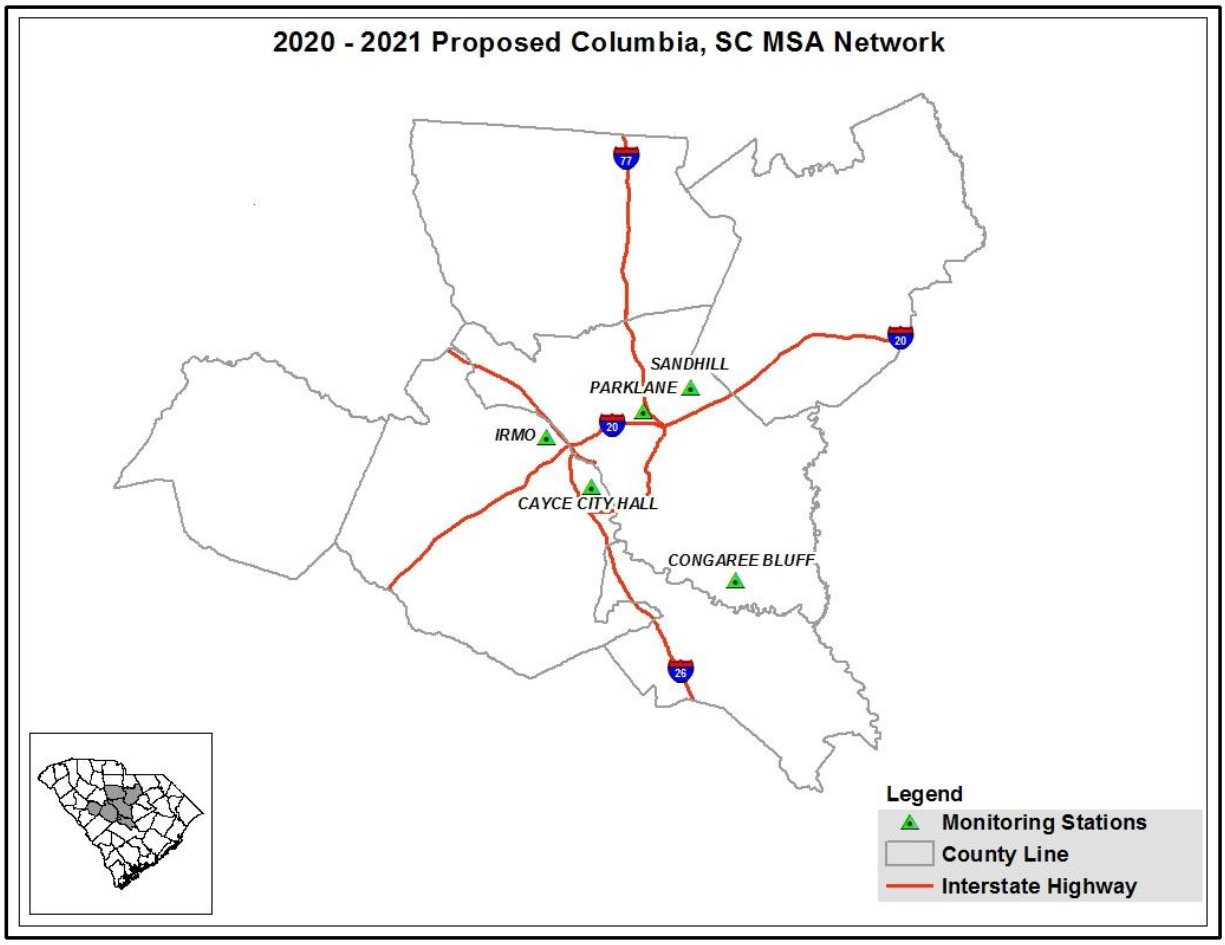
This site meets all 40 CFR Part 58, Appendix E requirements.

Changes for 2020-2021:
There are no changes planned for 2020-2021.

Monitors:

Parameter	Scale	Objective	Designa-tion	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
Ozone 44201-1	Urban	Upwind Background	SLAMS	4.54	Ultraviolet Absorption (087)	Continuous
Sulfur Dioxide	Urban	Upwind Background	SPM	4.54	Pulsed Fluorescence (560)	Continuous

Columbia MSA



Classification of Monitoring Type by Site

Site ID	Site Name	$PM_{2.5}$	$PM_{2.5}$ Cont.	Speciation	PM_{10}	Lead	Ozone	SO_2	NO_2/NO/NO_y	CO	Carbonyls	SVOC	Precip. Chem.	Precip.	MET
45-063-0008	Irmo	●	O												
45-063-0010	Cayce City Hall				●										
45-079-0007	Parklane (NCore)	●●	●	●			●	●	●	●		O	O	O	●

Site ID	Site Name	$PM_{2.5}$	$PM_{2.5}$ Cont.	Speciation	PM_{10}	Lead	Ozone	SO_2	NO_2/NO/NO_y	CO	Carbonyls	SVOC	Precip. Chem.	Precip.	MET
45-079-0021	Congaree Bluff						O						O	O	
45-079-1001	Sandhill						●		O						
TOTAL		3	2	1	1	0	3	1	2	1	0	1	2	2	1
O SPM / Other ● SLAMS ●●/OO duplicate / QA monitors															

Irmo

CSA/MSA: Columbia-Orangeburg-Newberry CSA / Columbia MSA
AQS Site ID: 45-063-0008
Location: 200 Leisure Lane
County: Lexington
Coordinates: +34.051017, -81.15492
Date Established: April 7, 1989
Site Evaluation: June 19, 2019

The Irmo site is located in Lexington County near the Town of Irmo. This site has a sampler for $PM_{2.5}$ and a continuous monitor for $PM_{2.5}$. The sample inlets are 39 meters from the nearest road.

This site meets all 40 CFR Part 58, Appendix E requirements.

Changes for 2020-2021:
The SO_2 monitoring at this site was discontinued on April 22, 2020. Semi-volatile Organic Compounds and Carbonyls were discontinued at this site in December 2019. The landowner has requested that this Site be relocated. We will submit a request to the EPA to approve the site relocation once it has been identified.

Monitors:
(Table continues on next page)

Parameter	Scale	Objective	Designa-tion	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
$PM_{2.5}$ 88101-1	Neighbor-hood	Population Exposure	SLAMS	4.9	FRM Gravimetric w/ VSCC (145)	1:1
$PM_{2.5}$ 88101-3	Neighbor-hood	Population Exposure	SPM	4.4	FEM FDMS Gravimetric (581)	Continuous

Cayce City Hall

CSA/MSA: Columbia-Orangeburg-Newberry CSA / Columbia MSA

AQS Site ID: 45-063-0010
Location: 1 830 Morlaine Road
County: Lexington
Coordinates: +33.96914, -81.06629
Date Established: December 6, 2007
Site Evaluation: February 4, 2020

The Cayce City Hall site is located in the City of Cayce and measures PM_{10}. This site was established to measure PM_{10} concentrations in populated areas and to determine the potential impact of occasional high concentrations on neighborhoods surrounding the industrialized area. The sample inlet is 24 meters from the nearest road.

This site meets all 40 CFR Part 58, Appendix E requirements.

Changes for 2020-2021:
There are no changes planned for 2020-2021.

Monitors:

Parameter	Scale	Objective	Designa-tion	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
PM_{10} 81102-1	Neighbor-hood	Population Exposure	SLAMS	2.42	TEOM-Gravimetric (079)	Continuous

Parklane (NCore)

CSA/MSA: Columbia-Orangeburg-Newberry CSA / Columbia MSA
AQS Site ID: 45-079-0007
Location: 8311 Parklane Road
County: Richland
Coordinates: +34.09398, -80.96230
Date Established: April 3, 1980
Site Evaluation: June 26, 2019

The Parklane site is located in north central Richland County within the city limits of Columbia. Parklane was originally sited to provide downwind population exposure measurements at the edge of the Columbia urban area population and has been expanded to support the full complement of NCore parameters. The suite of samplers measure collocated FRM $PM_{2.5}$, speciated $PM_{2.5}$, precipitation chemistry, precipitation, and SVOC. The suite of continuous monitors measure $PM_{2.5}$, ozone, SO_2, CO, and NO/NO_y. The site also provides support for demonstration, training, and equipment evaluation convenient to the Department's Columbia air laboratory. The sample inlets are 131 meters from the nearest road.

This site meets all 40 CFR Part 58, Appendix E requirements.

Changes for 2020:
There are no changes planned for 2020-2021.

Monitors:
***Bolded** parameters are an NCore requirement.
(Table continues on next page)

Parameter *Required	Scale	Objective	Designa-tion	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
$PM_{2.5}$ 88101-1	Neighbor-hood	Population Exposure	NCore SLAMS	4.9	FRM Gravimetric w/ VSCC (145)	1:3
Collocated $PM_{2.5}$ 88101-2	Neighbor-hood	Population Exposure	QA Collocated SLAMS	5.3	FRM Gravimetric w/ VSCC (145)	1:3

Parameter *Required	Scale	Objective	Designa-tion	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
$PM_{2.5}$ 88502-3	Neighbor-hood	Population Exposure	SLAMS	4.72	FDMS Gravimetric (183)	Continuous
Speciated $PM_{2.5}$	Neighbor-hood	Population Exposure	NCore SLAMS	2.4	CSN Protocol (811,812,826,838,839,841, 842)	1:3
$PM_{10-2.5}$ 86101-1	Neighbor-hood	Population Exposure	NCore SLAMS	4.4	Gravimetric FRM Pair (176)	1:3
Ozone 44201-1	Urban	Max Ozone Concentra-tion	NCore SLAMS	4.45	Ultraviolet Absorption (087)	Continuous
Sulfur Dioxide 42401-1	Neighbor-hood	Population Exposure/ Other	NCore SLAMS	4.45	Pulsed Fluorescent (560)	Continuous
Nitric Oxide /NO_y 42600-2 42601-2	Neighbor-hood	Population Exposure	NCore SLAMS	10.0	Chemi-lumine-sence (674)	Continuous
Carbon Monoxide 42101-1	Neighbor-hood	Population Exposure	NCore SLAMS	4.45	Gas filter Correlation (593)	Continuous
SVOC	Neighbor-hood	Population Exposure	SPM	1.4	PUF-GC/MS	1:6
Precipita-tion chemistry	Neighbor-hood	Regional Transport	Non-regulatory	1.4	Not applicable	Weekly-Tues-Tues
Precipita-tion	Neighbor-hood	General / Background	SPM	1.1	Tipping bucket (011)	Continuous and Sample
Wind Speed / Direction	Neighbor-hood	Local Conditions	SLAMS	10.0	Instruments for wind	Continuous

Parameter *Required	Scale	Objective	Designa-tion	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
					speed/wind direction (020)	

Congaree Bluff

CSA/MSA: Columbia-Orangeburg-Newberry CSA / Columbia MSA
AQS Site ID: 45-079-0021
Location: 1850 South Cedar Creek Road
County: Richland
Coordinates: +33.81467, -80.78113
Date Established: December 27, 1999
Site Evaluation: February 4, 2020

The Congaree Bluff site is located in southern Richland County. The site is located in a rural setting within the boundaries of the Congaree National Park. The Congaree Bluff monitoring continues a data record begun in 1981 with the establishment of the Congaree Swamp site (45-079-1006). The original site was established in cooperation with the Department of the Interior and the support of the General Assembly to provide long term monitoring in this unique area. The Congaree Swamp site was located in the flood plain and had to be relocated to the current Congaree Bluff site in 2001. Monitoring activities at this site are intended to represent conditions found in the National Park only. The Congaree Bluff site has monitors for ozone, SO_2, precipitation, and precipitation chemistry. Sample inlets are 188 meters from the nearest road. This site has been designated as a two-year rotational site for SO_2. The SO_2 monitor is scheduled to operate from 2022 through 2023.

The EPA has issued a waiver for 40 CFR Part 58, Appendix E, Section 4-Spacing from Obstructions and Section 11-Summary for tree obstructions. Also, the EPA issued a waiver for 40 CFR Part 58, Appendix E, Section 5-Spacing from Trees and Section 11-Summary for a drip line issue.

Changes for 2020-2021: There are no changes planned for 2020-2021.

Monitors:

(Table continues on next page)

Parameter	Scale	Objective	Designa-tion	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
Ozone 44201-1	Neighbor-hood	General / Background	SPM	4.15	Ultraviolet (047)	Continuous

Parameter	Scale	Objective	Designa-tion	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
Sulfur Dioxide 42401-1	Neighbor-hood	General / Background	SPM		Pulsed Fluorescent	Continuous
Precipita-tion Chemistry	Regional	Regional Transport	Non-regula-tory	1.70	IC	Weekly-Tue-Tue
Precipita-tion	Neighbor-hood	General/ Background	SPM	1.6	Tipping Bucket (011)	Continuous and Sample

Sandhill Experimental Station

CSA/MSA: Columbia-Orangeburg-Newberry CSA / Columbia MSA
AQS Site ID: 45-079-1001
Location: 900 Clemson Road
County: Richland
Coordinates: +34.13126, -80.86832
Date Established: January 1, 1959
Site Evaluation: February 21, 2020

The Sandhill Experimental Station Site is located in northeastern Richland County, downwind from the Columbia metropolitan area. This Site is located in a rapidly urbanizing portion of the City of Columbia. The Sandhill Site measures ozone and NO_2. The sample inlets are 31 meters from the nearest road.

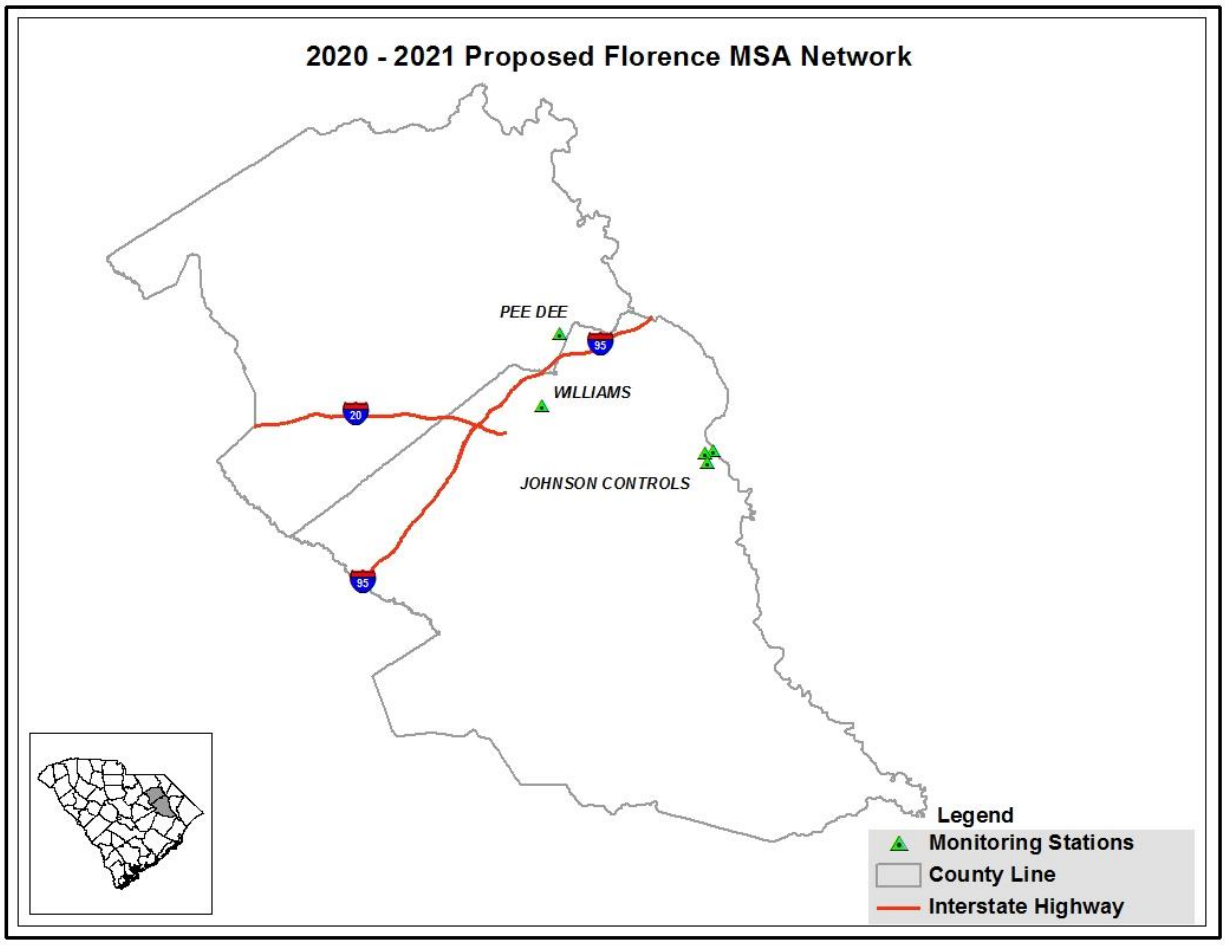
This Site meets all 40 CFR Part 58, Appendix E requirements.

Changes for 2020-2021:
There are no changes planned for 2020-2021.

Monitors:

Parameter	Scale	Objective	Designa-tion	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
Ozone 44201-1	Urban	Max Ozone Concentration	SLAMS	4.12	Ultraviolet Absorption (087)	Continuous
Nitrogen Dioxide 42602-1	Urban	General / Background Max Precursor Emissions	SPM	4.12	Chemi-luminesence (599)	Continuous

Florence MSA



Classification of Monitoring Type by Site

Site ID	Site Name	$PM_{2.5}$	$PM_{2.5}$ Cont.	Speciation	PM_{10}	Lead	Ozone	SO_2	NO_2	CO
45-031-0003	Pee Dee Exp. Station						●			
45-041-0003	Williams Middle School	●	●							
45-041-8001, 8002, 8003	Johnson Controls					O*				
TOTAL		1	1	0	0	*7	1	0	0	0
O SPM / Other ● SLAMS ●●/OO duplicate / QA monitors * See details on site page for number of samplers										

Pee Dee Experimental Station

CSA/MSA: none/Florence MSA
AQS Site ID: 45-031-0003
Location: 2200 Pocket Road (Darlington)
County: Darlington
Coordinates: +34.28569, -79.74485
Date Established: February 25, 1993
Site Evaluation: June 4, 2020

The Pee Dee Experimental Station Site is located in northeastern Darlington County. This Site serves as the required ozone monitor in the Florence MSA. The sample inlets are 215.8 meters from the nearest road.

This Site meets all 40 CFR Part 58, Appendix E requirements.

Changes for 2020-2021:
There are no changes planned for 2020-2021.

Monitors:

Parameter	Scale	Objective	Designa-tion	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
Ozone 44201-1	Urban	Max Ozone Concentration / General / Background	SLAMS	4.1	Ultraviolet Absorption (087)	Continuous

Williams Middle School

CSA/MSA: none/Florence MSA
AQS Site ID: 45-041-0003
Location: 1119 N. Irby Street
County: Florence
Coordinates: +34.21427, -79.76735
Date Established: August 4, 2008
Site Evaluation: May 7, 2020

The Williams Middle School Site is located in Florence County. The Department established the Williams Site to meet the 40 CFR Part 58 Appendix D requirements for collocated continuous monitoring for the Florence MSA. This site has the required collocated $PM_{2.5}$ FRM sampler and $PM_{2.5}$ continuous monitor. Sample inlets are 110 meters from the nearest road.

This Site meets all 40 CFR Part 58, Appendix E requirements.

Changes for 2020-2021:
There are no changes planned for 2020-2021.

Monitors:

Parameter	Scale	Objective	Designa-tion	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
$PM_{2.5}$ 88101-1	Neighbor-hood	Population Exposure/ Highest Concentration	SLAMS	2.71	FRM Gravimetric w/ VSCC (145)	1:3
$PM_{2.5}$ 88502-3	Neighbor-hood	Population Exposure	SLAMS	2.71	TEOM Gravimetric (704)	Continuous

Johnson Controls (3 Sites-JCI Railroad, JCI Entrance, JCI Woods)

CSA/MSA: none/Florence MSA
AQS Site ID: 45-041-8001, 8002, 8003
Location: Liberty Chapel at Bethel Road, Liberty Chapel at Paper Mill Road, Liberty Chapel at Paper Mill Road
County: Florence
Coordinates: +34.15567, -79.56981; +34.16413, -79.572330; +34.16747, -79.56266
Dates Established: January 4-10, 2012
Site Evaluation: May 2, 2020 (Entrance and Railroad), June 4, 2020 (Woods)

Johnson Controls Incorporated (JCI) is located in Florence County. It is now owned by Clarios. On May 7, 2010, the Department issued an air synthetic minor construction permit to Johnson Controls Battery Group for the Florence Recycling Center (Permit No. 1040-0129-CA). Under a settlement agreement with several petitioners[13], the Florence Recycling Center will conduct source-oriented ambient lead monitoring at three locations around the facility.

The JCI samplers are set on a 1:6 sampling schedule. In order to reduce the amount of time that staff must collect the filters, additional samplers have been added to each Site. Sampling frequency may be increased if needed for special investigations.

The 40 CFR 58.20 states that compliance to the siting regulations is optional, but it is the Department's intent to meet as many of the Appendix E requirements as possible. The JCI Railroad (45-041-8001) Site has one sampler. There is also a second sampler that runs consecutively. The JCI Railroad (45-041-8001) Site meets 40 CFR Part 58, Appendix E requirements.

The JCI Entrance (45-041-8002) Site has two samplers. There is also a third sampler that runs consecutively. The JCI Entrance (45-041-8002) Site meets all 40 CFR Part 58, Appendix E requirements.

The JCI Woods (45-041-8003) Site has one sampler. There is also a second sampler that runs consecutively. The JCI Woods (45-041-8003) Site meets 40 CFR Part 58, Appendix E requirements except Section 4-Spacing from Obstructions and Section 11-Summary siting requirements due to tree obstructions. However, the tree obstructions in the

[13] Coastal Conservation League and League of Women Voters of South Carolina vs South Carolina Department of Health and Environmental Control and Johnson Controls Battery Group, Inc., (State of SC, 2010).

predominant wind direction toward the source have been removed. A waiver was received on April 1, 2020, for the four trees to the north and east of the site.

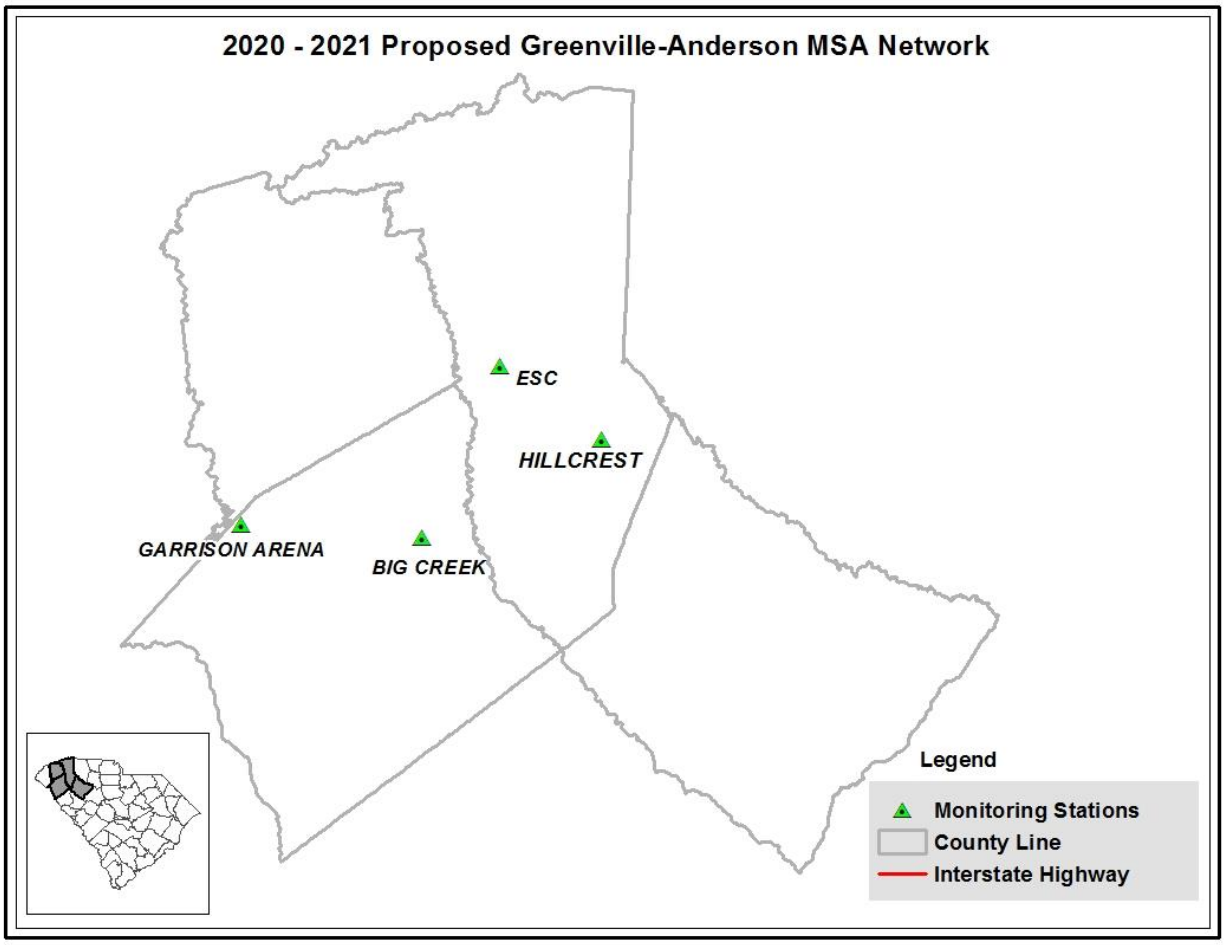
Changes for 2020-2021:
There are no changes planned for 2020-2021.

Monitors:

Site ID	Parameter	Scale	Objective	Desig-nation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
041-8001	Lead 14129	Middle	Source oriented	SPM	2.42	ICP/MS (193)	1:6
041-8001	Lead 14129	Middle	Source oriented	SPM	2.62	ICP/MS (193)	1:6
041-8002	Lead 14129	Middle	Source oriented	SPM	2.3	ICP/MS (193)	1:6
041-8002	Lead 14129	Middle	Source oriented	SPM	2.3	ICP/MS (193)	1:6
*041-8002	Lead 14129	Middle	Source oriented	SPM	2.6	ICP/MS (193)	1:6
041-8003	Lead 14129	Middle	Source oriented	SPM	2.4	ICP/MS (193)	1:6
041-8003	Lead 14129	Middle	Source oriented	SPM	2.4	ICP/MS (193)	1:6

*Collocated sampler

Greenville-Anderson MSA



Classification of Monitoring Type by Site

Site ID	Site Name	$PM_{2.5}$	$PM_{2.5}$ Cont.	Speciation	PM_{10}	Lead	Ozone	SO_2	NO_2	CO	Met
45-007-0005	Big Creek						●				
44-007-0006	Garrison Arena						●				
45-045-0015	Greenville ESC	●	O		●			●	●		
45-045-0016	Hillcrest	● ●					●				
TOTAL		3	1	0	1	0	3	1	1	0	0

Big Creek

CSA/MSA: Greenville-Spartanburg-Anderson CSA / Greenville-Anderson MSA
AQS Site ID: 45-007-0005
Location: 215 McAlister Road
County: Anderson
Coordinates: +34.62324, -82.53206
Date Established: June 4, 2008
Site Evaluation: March 9, 2020

The Big Creek Site is located northeast of the City of Anderson. The Site was established to represent maximum ozone concentrations in the Anderson MSA, downwind of Anderson and upwind background for the Greenville MSA. In February 2013, the MSA definitions were changed, and this Site is now contained within the Greenville-Anderson MSA. The sample inlet is 43.9 feet from the nearest road.

This Site meets all 40 CFR Part 58, Appendix E requirements.

Changes for 2020-2021:
This Site will run concurrently with the Garrison Arena Site for the 2020 Ozone Monitoring Season. Then, the Department will analyze the data and determine whether this Site is redundant.

Monitors:

Parameter	Scale	Objective	Designa-tion	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
Ozone 44201-1	Urban	Max Ozone Concentra-tion / Upwind Background	SLAMS	4.1	Ultraviolet Absorption (087)	Continuous

Garrison Arena

CSA/MSA: Greenville-Spartanburg-Anderson CSA / Greenville-Anderson MSA
AQS Site ID: 45-007-0006
Location: Woodburn Road, Pendleton
County: Anderson
Coordinates: 34.63, -82.81
Date Established: March 2, 2020
Site Evaluation: March 9, 2020

The Garrison Arena Site is located on the grounds of Clemson University at the T. Ed Garrison Arena near the northern border of Anderson County. This monitor measures ozone concentrations upwind of the Greenville-Spartanburg urbanized area.

This Site is 14.25 meters from the nearest road.

This Site will meet siting criteria found in 40 CFR Part 58 Appendix E.

Changes for 2020-2021:
There are no changes planned for 2020-2021.

Monitors:

Parameter	Scale	Objective	Designa-tion	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
Ozone 44201-1	Urban	General / Background	SLAMS	4.68	Ultraviolet Absorption (087)	Continuous

Greenville Employment Security Commission (ESC)

CSA/MSA: Greenville-Spartanburg-Anderson CSA / Greenville-Anderson MSA
AQS Site ID: 45-045-0015
Location: 133 Perry Avenue
County: Greenville
Coordinates: +34.84389, -82.41458
Date Established: April 11, 2008
Site Evaluation: May 21, 2020

The Greenville ESC Site is located in the city of Greenville and was established on April 11, 2008. This Site supports a $PM_{2.5}$ FRM sampler and continuous $PM_{2.5}$ FEM monitor. It also supports PM_{10}, SO_2, NO_2, and measurements for wind speed and wind direction. The sample inlets are 15.0 meters from the nearest road. The EPA Region 4 has selected this Site as one of the locations for a Regional Administrator required NO_2 monitor to help protect susceptible and vulnerable populations, as required by 40 CFR Part 58, Appendix D, Section 4.3.4.

This Site meets siting criteria found in 40 CFR Part 58 Appendix E except Section 4-Spacing from Obstructions, but there is still 270° of airflow around the probes.

Changes for 2020-2021:
There are no changes planned for 2020-2021.

Monitors:
(Table continues on next page)

Parameter	Scale	Objective	Designa-tion	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
$PM_{2.5}$ 88101-1	Neighbor-hood	Population Exposure / Welfare Related Impacts/ Collocated	SLAMS	3.5	FRM Gravimetric w/ VSCC (145)	1:1
$PM_{2.5}$ 88101-3	Neighbor-hood	Population Exposure/	SPM	4.55	FEM FDMS Gravimetric (581)	Continuous

Parameter	Scale	Objective	Designa-tion	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
		Welfare Related Impacts				
PM_{10} 81102-1	Neighbor-hood	Population Exposure	SLAMS	4.26	TEOM Gravimetric (079)	Continuous
Sulfur Dioxide 42401-1	Neighbor-hood	Population Exposure	SLAMS	4.54	Pulsed fluorescent (560)	Continuous
Nitrogen Dioxide 42602-1	Neighbor-hood	Population Exposure	SLAMS	4.54	Chemilumi-nescence (599)	Continuous

Hillcrest Middle School

CSA/MSA: Greenville-Spartanburg-Anderson CSA / Greenville-Anderson MSA
AQS Site ID: 45-045-0016
Location: 510 Garrison Road
County: Greenville
Coordinates: +34.75185, -82.25670
Date Established: February 17, 2009
Site Evaluation: May 21, 2020

The Hillcrest Middle School Site represents suburban areas near the interstate corridors in the Greenville MSA. Initiated in 2008, this Site was selected as a monitoring location based on results of the Greenville MSA Ozone Study. This Site supports an ozone monitor, a $PM_{2.5}$ FRM sampler, and a collocated $PM_{2.5}$ FRM sampler. The sample inlets are 54 meters from the nearest road.

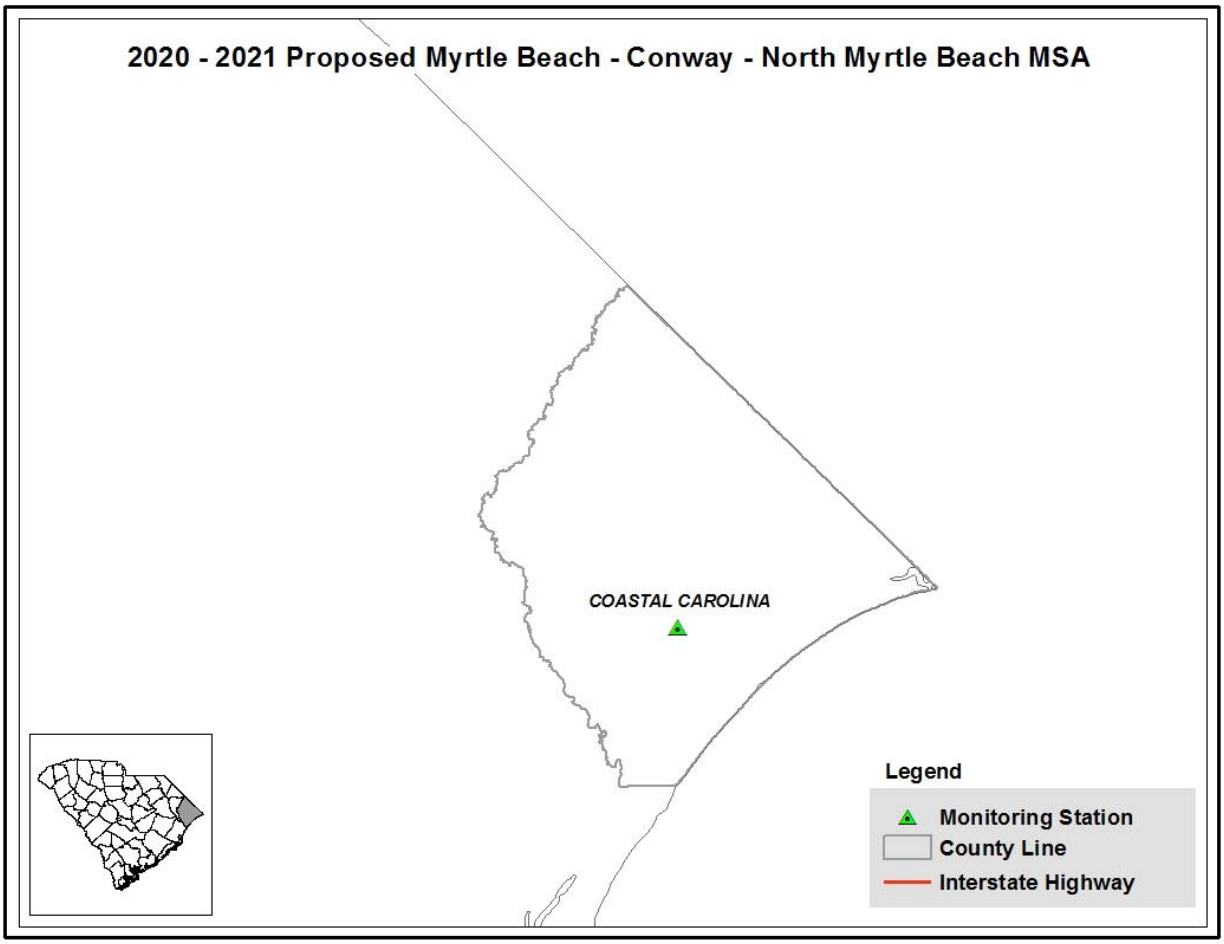
This Site meets all 40 CFR Part 58, Appendix E requirements.

Changes for 2020-2021:
There are no changes planned for 2020-2021.

Monitors:

Parameter	Scale	Objective	Designa-tion	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
$PM_{2.5}$ 88101-1	Urban	Population Exposure	SLAMS	3.41	FRM Gravimetric w/ VSCC (145)	1:3
Collocated $PM_{2.5}$ 88101-2	Urban	Population Exposure	QA SLAMS	3.5	FRM Gravimetric w/ VSCC (145)	1:3
Ozone 44201-1	Urban	Population Exposure	SLAMS	3.83	Ultraviolet Adsorption (087)	Continuous

Myrtle Beach-Conway-North Myrtle Beach, SC-NC MSA



Classification of Monitoring Type by Site

Site ID	Site Name	$PM_{2.5}$	$PM_{2.5}$ Cont.	Speciation	PM_{10}	Lead	Ozone	SO_2	NO_2	CO	MET
45-051-0008	Coastal Carolina						●				
TOTAL		0	0	0	0	0	1	0	0	0	0
O SPM / Other ● SLAMS ●●/OO duplicate / QA monitors											

Coastal Carolina

CSA/MSA: Myrtle Beach-Conway-North Myrtle Beach, SC-NC MSA
AQS Site ID: 45-051-0008
Location: Century Circle
County: Horry
Coordinates: 33.8007, -78.9939
Date Established: June 27, 2016
Site Evaluation: March 3, 2020

In February 2013, OMB combined Horry County with Brunswick County, NC to establish the Myrtle Beach-Conway-North Myrtle Beach, SC-NC MSA. In conjunction with the State of North Carolina, local government, and stakeholders, the Department established the Coastal Carolina Monitoring Site to be representative of expected maximum ozone concentrations in northeast South Carolina. In order to meet the minimum monitoring criteria in 40 CFR Part 58, Appendix D, at least one ozone monitor is required in the MSA. The sample inlet is 18.3 meters from the nearest road.

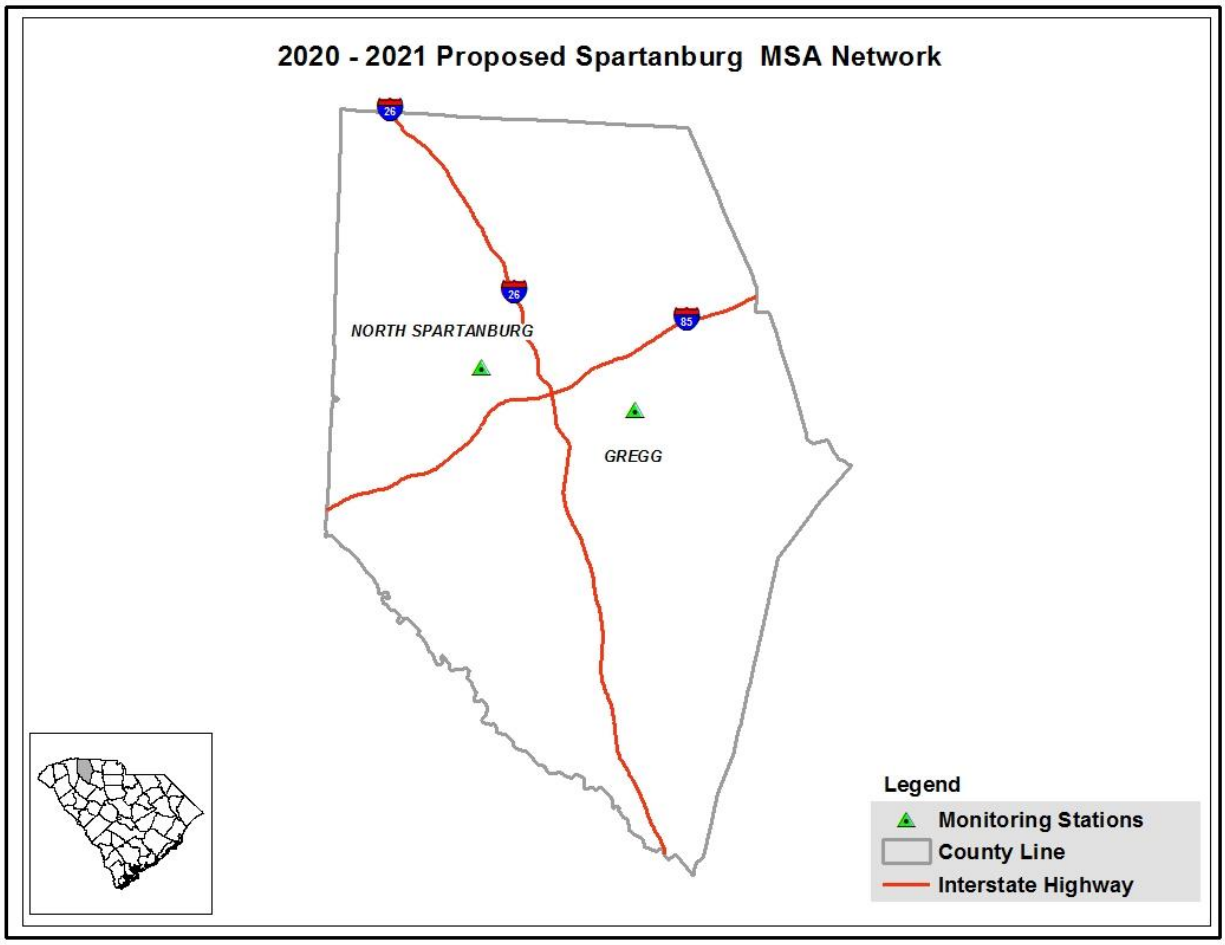
This Site meets all 40 CFR Part 58, Appendix E requirements.

Changes for 2020-2021:
The Coastal Carolina Monitoring Site collected its first complete ozone design value in 2019. Its design value for 2017-2019 is at 86 percent of the NAAQS, requiring the MSA to have a second ozone monitor, according to Appendix D of 40 CFR Part 58. Since this design value is the first complete design value for the monitor and the 2019 design value is so close to the 85% threshold, the Department and the State of North Carolina are working with EPA Region 4 to determine the appropriate ozone monitoring for this MSA and may wait to see what the 2020 design value is before taking action to add a second ozone monitor to the MSA.

Monitors:

Parameter	Scale	Objective	Designa-tion	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
Ozone 44201-1	Urban	Population Exposure	SLAMS	4.1	Ultraviolet (087)	Continuous

Spartanburg MSA



Classification of Monitoring Type by Site

Site ID	Site Name	$PM_{2.5}$	$PM_{2.5}$ Cont.	Speciation	PM_{10}	Lead	Ozone	SO_2	NO_2	CO
45-083-0009	North Spartanburg Fire Station #2						●			
45-083-0011	T.K. Gregg	● O	O							
TOTAL		2	1	0	0	0	1	0	0	0
O SPM / Other ● SLAMS ●●/OO duplicate / QA monitors										

North Spartanburg Fire Station #2

CSA/MSA: Greenville-Spartanburg-Anderson CSA / Spartanburg MSA
AQS Site ID: 45-083-0009
Location: 1556 John Dodd Road
County: Spartanburg
Coordinates: +34.98874, -82.07573
Date Established: April 4, 1990
Site Evaluation: February 5, 2019

The North Spartanburg Fire Station #2 Site is located in rural Spartanburg County, northwest of the City of Spartanburg. This Site supports an ozone monitor and was established as a maximum ozone concentration monitor for the Greenville-Spartanburg-Anderson urban area on April 4, 1990. This monitor is designated SLAMS and fulfills the requirement for a maximum concentration site for the Spartanburg MSA. The sample inlet is 92.5 meters from the nearest road.

This Site meets siting criteria found in 40 CFR Part 58 Appendix E except Section 4-Spacing from Obstructions. There is a northwest tree that does not meet the requirements for tree height but there is still more than 270° unobstructed air flow around the probe.

Changes for 2020-2021:
There are no changes planned for 2020-2021.

Monitors:

Parameter	Scale	Objective	Designa-tion	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
Ozone 44201-1	Urban	Max Ozone Concentration	SLAMS	4.2	Ultraviolet Absorption (047)	Continuous

T.K. Gregg Recreation Center

CSA/MSA: Greenville-Spartanburg-Anderson CSA / Spartanburg MSA
AQS Site ID: 45-083-0011
Location: 267 Northview Street
County: Spartanburg
Coordinates: +34.95557, -81.92480
Date Established: December 29, 2008
Site Evaluation: February 5, 2019

The T.K. Gregg Recreation Center Site is located in Spartanburg County. With the cooperation of local government and stakeholders, the Department established this $PM_{2.5}$ Site in the downtown Spartanburg area to meet the 40 CFR Part 58, Appendix D requirements for monitoring objectives, reporting and collocation requirements. The Site has a $PM_{2.5}$ FRM sampler and a collocated continuous $PM_{2.5}$ monitor. There is also a $PM_{2.5}$ sampler from the Charleston MSA that is being temporarily housed at this Site to meet 40 CFR Part 58 Appendix A collocation requirements. The sample inlets are 48.2 meters from the nearest road.

This Site meets all 40 CFR Part 58, Appendix E requirements.

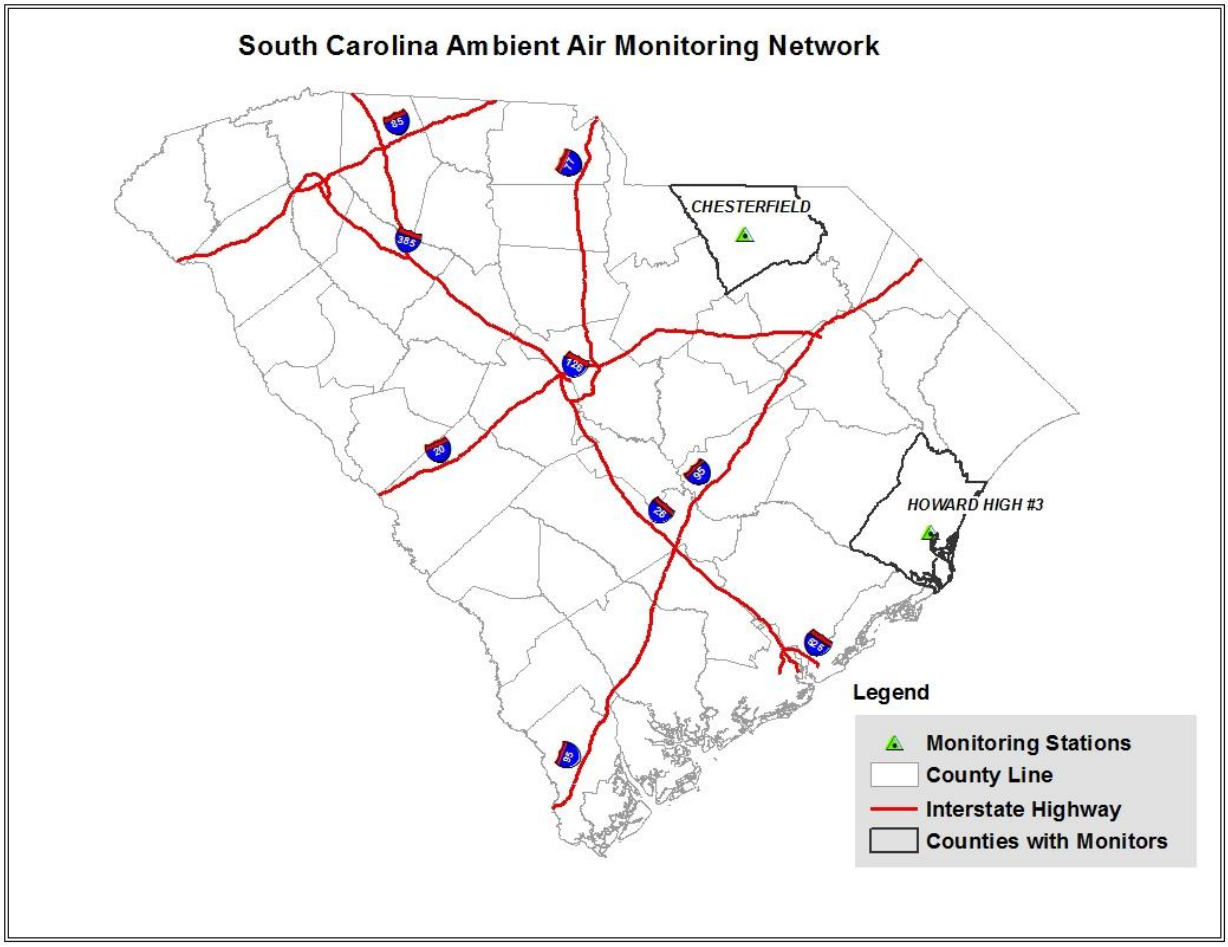
Changes for 2020-2021:
There are no changes planned for 2020-2021. The $PM_{2.5}$ sampler was moved temporarily to this Site to fulfill the State collocation requirements. Once the North Charleston Fire Station Monitoring Site is established in the Charleston-North Charleston MSA, this monitor will be moved back to that MSA.

Monitors:

Parameter	Scale	Objective	Designa-tion	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
$PM_{2.5}$ 88101-1	Neighbor-hood	Highest Concentration	SLAMS	2.4	FRM Gravimetric w/VSCC (145)	1:1
$PM_{2.5}$ 88502-3	Neighbor-hood	Highest Concentration	SPM	2.5	TEOM Gravimetric (702)	Continuous

Parameter	Scale	Objective	Designa-tion	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
Collocated PM2.5 88101-2	Neighbor-hood	Population Exposure	QA Colloca-ted SPM	2.5	FRM Gravimetric w/ VSCC (145)	1:6

Remainder of State



Classification of Monitoring Type by Site

Site ID	Site Name	$PM_{2.5}$	$PM_{2.5}$ Cont.	Speciation	PM_{10}	Lead	Ozone	SO_2	NO_2	Metals	Carbonyls	SVOC	VOCs	Precipitation
45-025-0001	Chesterfield	●	●				O			OO	OO	OO	OO	O
45-043-0011	Howard High School #3				*									
TOTAL		1	1	0	0	0	1	0	0	2	2	2	2	1

O SPM / Other ● SLAMS ●●/OO duplicate / QA monitors

*The PM_{10} monitor is being rotated and will begin operation again in 2021.

Chesterfield (NATTS)

CSA/MSA: none/none
AQS Site ID: 45-025-0001
Location: SC Hwy 145, McBee (Route 2 Box 100)
County: Chesterfield
Coordinates: +34.61538, -80.19878
Date Established: January 6, 2000
Site Evaluation: April 30, 2020

The Chesterfield Site is located in central Chesterfield County. The Chesterfield Site has continuous monitors for $PM_{2.5}$, ozone, and meteorological parameters. This Site serves as the required regional transport site for $PM_{2.5}$. The sample inlets are 43.9 meters from the nearest road.

The Chesterfield Site is a rural National Air Toxics Trends Station Site (NATTS) which includes Carbonyls, Volatile Organic Compounds (VOCs), Semi-Volatile Organic Compounds (SVOCs), and Metals sampling.

This Site meets all 40 CFR Part 58, Appendix E requirements.

Changes for 2020-2021:
There are no changes planned for 2020-2021.

Monitors:
(Table continues on next page)

Parameter	Scale	Objective	Desig-nation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
$PM_{2.5}$ 88101-1	Regional	Regional Transport	SLAMS	2.9	FRM Gravimetric w/ VSCC (145)	1:3
$PM_{2.5}$ 88502-3	Regional	Population Exposure	SLAMS	4.8	FDMS Gravimetric (183)	Continuous
Ozone 44201-1	Regional	General / Background	SPM	4.8	Ultraviolet Absorption (087)	Continuous

Parameter	Scale	Objective	Desig-nation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
Carbonyls	Urban	NATTS	Non-regula-tory	4.78	DNPH/HPLC	1:6
Collocated Carbonyls	Urban	NATTS	Non-regula-tory	4.78	DNPH/HPLC	1:6
SVOC	Urban	NATTS	Non-regula-tory	1.9	PUF/GCMS	1:6
Collocated SVOC	Urban	NATTS	Non-regula-tory	1.9	PUF/GCMS	1:6
VOC	Urban	NATTS	Non-regula-tory	3.23	Canister/ GCMS	1:6
Collocated VOC	Urban	NATTS	Non-regula-tory	3.28	Canister/ GCMS	1:6
Metals	Urban	NATTS	SPM	2.4	PM_{10} / ICP/MS	1:6
Collocated Metals	Urban	NATTS	SPM	2.4	PM_{10} / ICP/MS	1:6
Precipita-tion	Neighbor-hood	General/ Background	SPM	1.73	Tipping Bucket (011)	Continuous

Howard High School #3

CSA/MSA: Myrtle Beach-Conway SC, NC CSA/none
AQS Site ID: 45-043-0011
Location: 594 Gilbert Street
County: Georgetown
Coordinates: +33.36892, -79.29662
Date Established: July 15, 2008
Site Evaluation: January 23, 2019

The Howard High #3 Site is located in Georgetown County on the grounds of Howard High School and supports a PM_{10} monitor. PM_{10} monitoring in this area of Georgetown has been ongoing since 1970, when the original Howard High site was established. The sample inlet is 49.7 meters from the nearest road.

This site began a rotational schedule in 2019. The PM_{10} monitoring was discontinued on April 3, 2019, and will operate again from 2021 through 2022.

This site meets all 40 CFR Part 58, Appendix E requirements.

Changes for 2020-2021:
Instead of terminating this Site, the Department has decided to maintain the Howard High #3 Site and operate the PM_{10} monitor on a two-year rotation from 2021-2022.

Monitors:

Parameter	Scale	Objective	Designation	Probe Height (m)	Analysis & (Method Code)	Sampling Frequency
PM_{10} 81102-1	Neighbor-hood	Population Exposure/ Highest Concentration	SPM		TEOM Gravime-tric (079)	Continuous

Network Development

The Monitoring Network provides data to support an array of decisions ranging from development of emissions strategies to protect and improve air quality to the level of activity appropriate for individuals in sensitive populations. To support these varied data users, the network must provide both stable, long-term measures to document trends and rapid reporting of conditions to the public. In response to land use, population, and urban areas growth, the network must be evaluated and adjusted to meet the changing conditions and needs.

The Monitoring Network described in this plan continues to build upon a significant transition from the network that has evolved over the last thirty-five years. It reflects the successes in reducing ambient concentrations of TSP, lead, CO, NO_2, and SO_2, and the increasing concern about the impact of fine particles and ozone on public health and the environment.

A series of studies are planned for the major urban areas, as resources permit, to gain better understanding of the air quality, and provide information to improve the monitoring network. In addition to the intensive studies that provide a detailed 'snapshot,' it is intended that SPM sites be established and monitored in rotation to provide regular checks and long term tracking of the trends in air quality in all areas of the state including smaller cities, towns, and rural areas. The implementation of this long-term strategy is contingent on sufficient federal funding to support the core-required monitoring and will be developed and evaluated as resources become available. Project plans will be developed for the monitoring and data analysis activity to better define the scope of these strategies prior to implementation. These studies are long-term needs the Department has identified and are important tools for evaluating and improving the representativeness of the ambient air monitoring network and our knowledge of air quality in the state.

Appendix A: Notification of Termination

The Table below contains information on the monitoring sites the Department has scheduled to terminate.

Site	ID	Date Established	Notes
Long Creek	45-073-0001	August 1, 1983	Due to limited resources and limited use of the data, the Department has decided to terminate this site.

Termination of the Long Creek (45-073-0001) Monitoring Site

The Department is notifying the EPA that all monitoring at the Long Creek (45-073-0001) Site has been terminated and all monitoring ended January 22, 2020.

Details on the Long Creek (45-073-0001) Site are given in the Table below.

Long Creek (45-073-0001) Monitoring Site Information Table

Name	Long Creek
Site ID	45-073-0001
Address	Round Tower Mountain Road
County	Oconee
Name of MSA	None
Name of CSA	None
Coordinates	+34.805333, -83.23777
Date Established	August 1, 1983
Parameter	$PM_{2.5}$
Scale	Urban
Begin Date	May 4,1989
End Date	December 4, 2019
Objective	General/Background
Designation	SPM
Probe Height	4.0
Analysis Method and code	FDMS Gravimetric (581)
Sampling Frequency	Continuous

Distance to road	30 meters
Distance to drip line	7.48
Distance to nearest obstruction	9.8
Parameter	Ozone
Scale	Regional
Begin Date	July 1, 1991
End Date	November 6, 2019
Objective	General/Background
Designation	SPM
Probe Height	4.18
Analysis Method and code	Ultraviolet (047)
Sampling Frequency	Continuous
Distance to road	30 meters
Distance to drip line	9.8
Distance to nearest obstruction	11.4
Parameter	Sulfur Dioxide
Scale	Regional
Begin Date	July 1, 1991
End Date	January 22, 2020
Objective	Regional Transport
Designation	SPM
Probe Height	4.18
Analysis Method and code	Pulsed Fluorescent
Sampling Frequency	Continuous
Distance to road	30 meters
Distance to drip line	7.48
Distance to nearest obstruction	9.8
Parameter	Precipitation
Scale	Neighborhood
Objective	General/Background
Designation	SPM
Probe Height	1.73
Analysis Method and code	Tipping Bucket (011)

Sampling Frequency	Continuous and Sample

Background

The Long Creek (45-073-0001) Site was located at the top of Round Mountain in northwest Oconee County. Oconee County is included in the Seneca, SC Micropolitan Statistical Area. The site monitored for ozone, sulfur dioxide, continuous $PM_{2.5}$, and precipitation and all monitors were designated as SPM. This site was established as a part of the Southern Oxidant Study in 1983. In the past, it was used as a 'bellwether' site for regional transport of criteria pollutants from the Atlanta area. Unfortunately, the site's had continual tree obstructions and drip line issues. Also, it was the most expensive site to operate because of its remote location. Therefore, in order to conserve resources, the Department has decided to terminate the site.

Since the establishment of this Site, the trees surrounding the site have grown. In the Table below, the first panorama shown below was taken in 2015. All of the area above the red line in the picture were considered obstructions. Since that time, some of the trees were cut. Also, there are two tree limbs that cause the drip line requirement found in 40 CFR 58.5(a) to not be met (7.48 meters).

Table of Long Creek Monitoring Site Panoramas

2015 Long Creek Monitoring Site Panorama from Top of Monitor Building

2018 Long Creek Site Panorama Toward Site

2018 Long Creek Site Panorama Away from Site

Region 4 has requested, and the Department herein gives notification that the $PM_{2.5}$, ozone, and SO_2 SPM monitors which have been in operation for more than 24 months will be terminated.

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Appendix B: Site Evaluations Summary for CFR 40 Part 58, Appendix E Table

Site Evaluations are conducted yearly on each monitoring site to ensure compliance to requirements found in 40 CFR Part 58, Appendix E. After appropriate administrative review, the Site Evaluations are sent to the EPA Region 4. The following tables summarize information about the latest Site Evaluations for each monitoring site.

The first table gives the column number and the shortened Column Name listed in the columns of the second table. It also gives the Section number and the regulatory requirement it represents from the 40 CFR, Part 58, Appendix E. The second table lists each monitoring site, their individual criteria pollutant monitors, and the fulfillment and/or measurements of the 40 CFR Part 58, Appendix E requirements. For brevity, the column titles in the second table have been shortened as follows:

Column	Column Name	40 CFR Part 58, Appendix E Requirements
Column 1:	Site ID, Site Name and Date Visited	Site Identification information and date the Site Evaluation was conducted.
Column 2:	Parameter	Criteria Pollutant.
Column 3:	Sampling Train	Section 9. For reactive gases, is sampling train made of borosilicate glass, FEP Teflon or their equivalent?
Column 4:	Sampling Time	Section 9. For reactive gases, is sampling time <20 seconds?
Column 5:	Probe Height	Section 2. Horizontal and Vertical Placement: Height from ground to probe must be 2-15 meters.
Column 6:	Support Structure	Section 2. Horizontal and Vertical Placement: Is Horizontal and vertical distance from supporting structure >1 meter.
Column 7:	Collocation Placement	Section 11. Horizontal and Vertical Placement: Collocated monitors must be within 4 meters of each other.
Column 8:	Flow Rates	Section 11. Horizontal and Vertical Placement: For PM collocation, flow rates greater than 200 liters/min must be at least 2 meters apart or at least 1-meter flow rates for less than 200 liters/min.
Column 9:	Minor Sources	Section 3. Spacing from Minor Sources: Probe should be away from minor sources.
Column 10:	Obstructions*	Section 4. Spacing from Obstructions: Distance from probe to obstacle must be at least twice the height the obstacle protrudes above the probe.
Column 11:	Airflow	Section 4. Spacing from Obstructions: Must have unrestricted airflow 270 degrees around probe.
Column 12:	Dripline	Section 5. Spacing from Trees: Distance from dripline of trees to probe must be <10 meters.
Column 13:	Roadway	Section 6. Spacing from Roadways: Does it meet distance from roadway to probe?

Site ID, Site Name and Date Visited	Para-meter	Sam-pling Train	Sam-pling Time	Probe Height (m)		Support Structure	Colloca-tion Place-ment (m)		Flow Rate	Minor Sources	*Obstr uctions	Air-flow	Dripline (m)		Roadway (m)	
003-0003 Jackson 2/26/2020	Ozone	Yes	Yes	Yes	3.35	Yes	N/A	N/A	N/A	Yes	*No	Yes	Yes	11.5	Yes	128.0
037-0001 Trenton 2/26/2020	$PM_{2.5}$	N/A	N/A	Yes	4.72	Yes	N/A	N/A	Yes	Yes	Yes	Yes	Yes	No trees	Yes	30.3
037-0001 Trenton 2/26/2020	$PM_{2.5}$ C	N/A	N/A	Yes	4.57	Yes	N/A	N/A	Yes	Yes	Yes	Yes	Yes	No trees	Yes	30.3
037-0001 Trenton 2/26/2020	Ozone	Yes	Yes	Yes	3.45	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	No trees	Yes	30.3
015-1002 Moncks Corner	Ozone	Yes	Yes	Yes	3.13	Yes	N/A	N/A	N/A	Yes	No	No	No	1.40	Yes	15.2
019-0003 Jenkins Ave. 1/29/2020	PM_{10}	N/A	N/A	Yes	4.1	Yes	N/A	N/A	Yes	Yes	Yes	Yes	Yes	16.0	Yes	33.5
019-0003 Jenkins Ave. 1/29/2020	SO_2	Yes	Yes	Yes	4.68	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	16.0	Yes	33.5
019-0003 Jenkins Ave. 1/29/2020	NO_2	Yes	Yes	Yes	4.68	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	16.0	Yes	33.5

Site ID, Site Name and Date Visited	Para-meter	Sam-pling Train	Sam-pling Time	Probe Height (m)		Support Structure	Colloca-tion Place-ment (m)		Flow Rate	Minor Sources	*Obstr uctions	Air-flow	Dripline (m)		Roadway (m)	
019-0046 Cape Romain 1/15/2020	$PM_{2.5}$	N/A	N/A	Yes	4.71	Yes	N/A	N/A	N/A	Yes	No	No	Yes	15.5	Yes	86.0
019-0046 Cape Romain 1/15/2020	Ozone	Yes	Yes	Yes	4.22	Yes	N/A	N/A	N/A	Yes	No	No	Yes	12.6	Yes	86.0
019-0046 Cape Romain 1/15/2020	SO_2	Yes	Yes	Yes	4.10	Yes	N/A	N/A	N/A	Yes	No	No	Yes	12.6	Yes	86.0
019-0048 FAA 1/23/2020	$PM_{2.5}$	N/A	N/A	Yes	2.42	Yes	N/A	N/A	Yes	Yes	No	Yes	No	5.9	Yes	160.0
019-0049 CPW 1/23/2020	$PM_{2.5}$	N/A	N/A	Yes	2.25	Yes	N/A	N/A	Yes	Yes	*No	Yes	No	4.43	Yes	24.8
019-0049 CPW 1/23/2020	$PM_{2.5}$ C	N/A	N/A	Yes	2.83	Yes	N/A	N/A	Yes	Yes	*No	Yes	No	5.63	Yes	24.8
091-0008 York Landfill 2/28/2019	Ozone	Yes	Yes	Yes	4.54	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	26.40	Yes	34.8

Site ID, Site Name and Date Visited	Para-meter	Sam-pling Train	Sam-pling Time	Probe Height (m)		Support Structure	Colloca-tion Place-ment (m)		Flow Rate	Minor Sources	*Obstr uctions	Air-flow	Dripline (m)		Roadway (m)	
091-0008 York Landfill 2/28/2019	SO_2	Yes	Yes	Yes	4.54	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	26.40	Yes	34.8
063-0008 Irmo 6/19/2019	$PM_{2.5}$ C	N/A	N/A	Yes	4.87	Yes	Yes	1.4	Yes	Yes	Yes	Yes	Yes	N/A	Yes	39.0
063-0008 Irmo 6/19/2019	$PM_{2.5}$	N/A	N/A	Yes	4.6	Yes	Yes	1.4	Yes	Yes	Yes	Yes	Yes	N/A	Yes	39.0
063-0008 Irmo 6/19/2019	SO_2	Yes	Yes	Yes	3.38	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	N/A	Yes	39.0
063-0010 Cayce CH 2/4/2020	PM_{10}	N/A	N/A	Yes	2.22	Yes	N/A	N/A	Yes	Yes	Yes	Yes	Yes	10.5	Yes	24.0
079-0007 Parklane 6/26/2019	$PM_{2.5}$	N/A	N/A	Yes	4.26	Yes	Yes	2.4	Yes	Yes	Yes	Yes	Yes	16.7	Yes	131.0
079-0007 Parklane 6/26/2019	$PM_{2.5}$	N/A	N/A	Yes	4.7	Yes	Yes	2.4	Yes	Yes	Yes	Yes	Yes	16.7	Yes	131.0
079-0007 Parklane 6/26/2019	$PM_{2.5}$ C	N/A	N/A	Yes	4.5	Yes	N/A	N/A	Yes	Yes	Yes	Yes	Yes	22.9	Yes	131.0

Site ID, Site Name and Date Visited	Para-meter	Sam-pling Train	Sam-pling Time	Probe Height (m)		Support Structure	Colloca-tion Place-ment (m)		Flow Rate	Minor Sources	*Obstr uctions	Air-flow	Dripline (m)		Roadway (m)	
079-0007 Parklane 6/26/2019	Speciat ed $PM_{2.5}$	N/A	N/A	Yes	2.40	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	15.3	Yes	145.8
079-0007 Parklane 6/26/2019	PM_{10} C	N/A	N/A	Yes	5.1	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	17.9	Yes	131.0
079-0007 Parklane 6/26/2019	Ozone	Yes	Yes	Yes	4.26	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	22.3	Yes	131.0
079-0007 Parklane 6/26/2019	SO_2	Yes	Yes	Yes	4.26	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	22.3	Yes	131.0
079-0007 Parklane 6/26/2019	CO	Yes	Yes	Yes	4.26	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	22.3	Yes	131.0
079-0007 Parklane 6/26/2019	NO/NO_y	Yes	Yes	Yes	10.0	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	22.3	Yes	131.0
079-0021 Congaree Bluff 2/24/2020	Ozone	Yes	Yes	Yes	4.15	Yes	N/A	N/A	N/A	Yes	**No	Yes	No	7.4	Yes	187.5
079-0021 Congaree Bluff 2/24/2020	SO_2	Yes	Yes	Yes	4.15	Yes	N/A	N/A	N/A	Yes	**No	Yes	No	7.4	Yes	187.5

Site ID, Site Name and Date Visited	Para-meter	Sam-pling Train	Sam-pling Time	Probe Height (m)		Support Structure	Colloca-tion Place-ment (m)		Flow Rate	Minor Sources	*Obstr uctions	Air-flow	Dripline (m)		Roadway (m)	
079-1001 Sandhill 2/21/2020	Ozone	Yes	Yes	Yes	4.2	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	16.4	Yes	31.1
079-1001 Sandhill 2/21/2020	NO_2	Yes	Yes	Yes	4.2	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	16.4	Yes	31.1
031-0003 Pee Dee 6/04/2020	Ozone	Yes	Yes	Yes	4.16	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	No trees	Yes	193.3
041-0003 Williams MS 5/07/2020	$PM_{2.5}$ C	N/A	N/A	Yes	2.23	Yes	N/A	N/A	Yes	Yes	Yes	Yes	Yes	19.4	Yes	110.0
041-0003 Williams MS 5/07/2020	$PM_{2.5}$	N/A	N/A	Yes	2.15	Yes	N/A	N/A	Yes	Yes	Yes	Yes	Yes	20.4	Yes	110.0
041-8001 JCI Railroad 5/07/2020	Lead POC 1	N/A	N/A	Yes	2.58	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	17.4	Yes	99.0
041-8001 JCI Railroad 5/07/2020	Lead POC 2	N/A	N/A	Yes	2.59	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	17.4	Yes	99.0
041-8002 JCI Entrance 5/07/2020	Lead POC 1	N/A	N/A	Yes	2..53	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	17.2	Yes	37.0

Site ID, Site Name and Date Visited	Para-meter	Sam-pling Train	Sam-pling Time	Probe Height (m)		Support Structure	Colloca-tion Place-ment (m)		Flow Rate	Minor Sources	*Obstr uctions	Air-flow	Dripline (m)		Roadway (m)	
041-8002 JCI Entrance 5/07/2020	Lead POC 2	N/A	N/A	Yes	2.52	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	19.3	Yes	37.0
041-8002 JCI Entrance 5/07/2020	Lead POC 3	N/A	N/A	Yes	2.54	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	19.3	Yes	37.0
041-8003 JCI Woods 6/04/2020	Lead POC 1	N/A	N/A	Yes	2.43	Yes	N/A	N/A	N/A	Yes	*No	Yes	Yes	20.4	Yes	1030.0
041-8003 JCI Woods 6/04/2020	Lead POC 2	N/A	N/A	Yes	2.43	Yes	N/A	N/A	N/A	Yes	*No	Yes	Yes	20.4	Yes	1030.0
041-8003 JCI Woods 6/04/2020	Lead #3	N/A	N/A	Yes	2.42	Yes	N/A	N/A	N/A	Yes	*No	Yes	Yes	21.4	Yes	1030.0
007-0005 Big Creek 3/09/2020	Ozone	Yes	Yes	Yes	4.10	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	No trees	Yes	43.9
045-0015 ESC 5/21/2020	$PM_{2.5}$	N/A	N/A	Yes	3.50	Yes	Yes	2.84	Yes	Yes	**No	Yes	Yes	19.5	Yes	15.9
045-0015 ESC 5/21/2020	$PM_{2.5}$ C	N/A	N/A	Yes	4.6	Yes	Yes	2.84	Yes	Yes	Yes	Yes	Yes	16.5	Yes	13.8
045-0015 ESC	PM_{10}	N/A	N/A	Yes	4.35	Yes	N/A	N/A	Yes	Yes	Yes	Yes	Yes	20.8	Yes	12.4

Site ID, Site Name and Date Visited	Para-meter	Sam-pling Train	Sam-pling Time	Probe Height (m)		Support Structure	Colloca-tion Place-ment (m)		Flow Rate	Minor Sources	*Obstr uctions	Air-flow	Dripline (m)		Roadway (m)	
4/4/2019																
045-0015 ESC 5/21/2020	SO_2	Yes	Yes	Yes	4.35	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	16.0	Yes	13.0
045-0015 ESC 5/21/2020	NO_2	Yes	Yes	Yes	4.35	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	16.0	Yes	13.0
045-0016 Hillcrest 5/21/2020	$PM_{2.5}$	N/A	N/A	Yes	3.42	Yes	Yes	1.72	Yes	Yes	Yes	Yes	Yes	67.0	Yes	54.0
045-0016 Hillcrest 5/21/2020	$PM_{2.5}$	N/A	N/A	Yes	3.42	Yes	Yes	1.72	Yes	Yes	Yes	Yes	Yes	67.0	Yes	54.0
045-0016 Hillcrest 5/21/2020	Ozone	Yes	Yes	Yes	3.96	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	67.0	Yes	54.0
Garrison Arena 007-0006 3/9/2020	Ozone	Yes	Yes	Yes	4.55	Yes	N/A	N/A	N/A	Yes	*No	Yes	Yes	12.6	Yes	33.9
077-0003 Wolf Creek 5/22/2019	Ozone	Yes	Yes	Yes	4.15	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	26.3	Yes	56.4
051-0008 Coastal Carolina	Ozone	Yes	Yes	Yes	4.10	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	10.3	Yes	18.3

Site ID, Site Name and Date Visited	Para-meter	Sam-pling Train	Sam-pling Time	Probe Height (m)		Support Structure	Colloca-tion Place-ment (m)		Flow Rate	Minor Sources	*Obstr uctions	Air-flow	Dripline (m)		Roadway (m)	
3/3/2020																
083-0009 NSFS#2 2/5/2019	Ozone	Yes	Yes	Yes	3.9	Yes	N/A	N/A	N/A	Yes	Yes	No	Yes	21.8	Yes	92.5
083-0011 TK Gregg 2/9/2019	$PM_{2.5}$	N/A	N/A	Yes	2.43	Yes	Yes	1.7	Yes	Yes	Yes	Yes	Yes	37.0	Yes	48.2
083-0011 TK Gregg 2/9/2019	$PM_{2.5}$	N/A	N/A	Yes	2.43	Yes	Yes	1.7	Yes	Yes	Yes	Yes	Yes	37.0	Yes	48.2
083-0011 TK Gregg 2/9/2019	$PM_{2.5}$ C	N/A	N/A	Yes	2.44	Yes	N/A	N/A	Yes	Yes	Yes	Yes	Yes	37.0	Yes	48.2
025-0001 Chesterfield 4/30/2020	$PM_{2.5}$	N/A	N/A	Yes	2.1	Yes	N/A	N/A	Yes	Yes	Yes	Yes	Yes	23.0	Yes	43.9
025-0001 Chesterfield 4/30/2020	$PM_{2.5}$ C	N/A	N/A	Yes	4.90	Yes	N/A	N/A	Yes	Yes	Yes	Yes	Yes	25.8	Yes	33.1
025-0001 Chesterfield 4/30/2020	Speciated $PM_{2.5}$	N/A	N/A	Yes	2.0	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	32.8	Yes	43.9

Site ID, Site Name and Date Visited	Para-meter	Sam-pling Train	Sam-pling Time	Probe Height (m)		Support Structure	Colloca-tion Place-ment (m)		Flow Rate	Minor Sources	*Obstr uctions	Air-flow	Dripline (m)		Roadway (m)	
025-0001 Chesterfiel d 4/30/2020	Ozone	Yes	Yes	Yes	4.65	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes	25.0	Yes	33.1
073-0001 Long Creek 10/23/2018	$PM_{2.5}$ C	N/A	N/A	Yes	4.18	Yes	N/A	N/A	Yes	Yes	Yes	No	No	7.48	Yes	30.0
073-0001 Long Creek 10/23/2018	Ozone	Yes	Yes	Yes	4.06	Yes	N/A	N/A	N/A	Yes	Yes	No	No	9.08	Yes	30.0
073-0001 Long Creek 10/23/2018	SO_2	Yes	Yes	Yes	4.06	Yes	N/A	N/A	N/A	Yes	Yes	No	No	9.08	Yes	30.0

*The monitor is still considered in compliance if the distance from probe to obstacle is not at least twice the height the obstacle protrudes above the probe but there is still 270° of airflow around probe. **Site has waiver for these obstructions

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Appendix C: Alphabetical Order of Monitoring Sites

Monitoring Site Name	MSA/County	Page
Big Creek	Greenville-Anderson MSA	72
Cape Romain	Charleston-North Charleston MSA	50
Cayce City Hall	Columbia MSA	59
Charleston Public Works (CPW)	Charleston-North Charleston MSA	53
Chesterfield	Chesterfield County	84
Coastal Carolina	Myrtle Beach-Conway-North Myrtle Beach SC-NC MSA	78
Congaree Bluff	Columbia MSA	63
FAA	Charleston-North Charleston MSA	52
Garrison Arena	Greenville-Anderson MSA	73
Greenville Employment Security Commission (ESC)	Greenville-Anderson MSA	74
Hillcrest Middle School	Greenville-Anderson	76
Irmo	Columbia MSA	58
Irving Street	Charleston-North Charleston MSA	49
Howard High #3	Georgetown County	86
Jackson Middle School	Augusta-Richmond County, GA-SC MSA (part)	42
Jenkins Ave. Fire Station	Charleston-North Charleston MSA	47
Johnson Controls-JCI Railroad	Florence MSA	69
Johnson Controls-JCI Entrance	Florence MSA	69
Johnson Controls-JCI Woods	Florence MSA	69
Moncks Corner National Guard	Charleston-North Charleston MSA	46
North Charleston Fire Station	Charleston-North Charleston MSA	48
North Spartanburg Fire Station #2	Spartanburg MSA	80
Parklane (NCore)	Columbia MSA	60
Pee Dee Experimental Station	Florence MSA	67
Sandhill Experimental Station	Columbia MSA	65
T.K. Gregg Recreational Center	Spartanburg MSA	81
Trenton	Augusta-Richmond County, GA-SC MSA (part)	43
Williams Middle School	Florence MSA	68
York Landfill	Charlotte-Concord-Gastonia MSA	55

Appendix D: Summary of Changes for July 1, 2019 through December 31, 2020

Augusta-Richmond County, GA-SC MSA (South Carolina portion includes Aiken and Edgefield Counties)

No changes planned for 2020.

Charleston-North Charleston MSA

Bushy Park (45-015-0002) Site – This Site will be discontinued after the Moncks Corner National Guard Site is established.

Moncks Corner National Guard (45-015-1002) Site – This Site is targeted to become operational on March 1, 2020 and will house the required Ozone monitor for the MSA.

North Charleston Fire Station (45-019-0020) Site – This Site is targeted to become operational on January 1, 2020 and will house the required $PM_{2.5}$ monitors from the FAA and CPW Sites.

Cape Romain (45-019-0046) Site – The SO_2 monitor has been put on a two-year rotating schedule and will begin operation on January 1, 2020.

FAA (45-019-0048) Site – This Site or the CPW Site will operate for one year, then be discontinued when the North Charleston Fire Station Site is established.

CPW (45-019-0049) Site – This Site or the FAA Site will operate for one year, then be discontinued when the North Charleston Fire Station Site is established.

Charlotte-Concord-Gastonia, NC-SC MSA

York Landfill (45-091-0008) Site – The SO_2 monitor has been put on a two-year rotating schedule and will begin operation on January 1, 2020.

Columbia MSA

Irmo (45-063-0008) Site – The carbonyls, SVOCs, and SO_2 will be discontinued on 12/31/2019.

Parklane (45-079-0007) Site – The SLAMS Lead monitor is no longer required at the NCore site. It was discontinued on December 31, 2018.

Congaree Bluff (45-079-0021) Site – The SO_2 monitor has been put on a two-year rotating schedule and will begin operation on January 1, 2022.

Florence MSA

No changes planned for 2020.

Greenville-Anderson MSA

Big Creek (45-007-0005) Site – This Site will run concurrently with the Garrison Arena Site for the 2020 Ozone season, and then be discontinued after October 31, 2020.

Garrison Arena (45-007-0006) Site – This Site is targeted to become operational in 2020.

Clemson (45-077-0002) Site – This Site will close after the 2019 Ozone season.

Wolf Creek (45-077-0003) Site – This Site will close after the 2019 Ozone season.

Hilton Head Island-Bluffton MSA

No changes planned for 2020.

Myrtle Beach-Conway-North Myrtle Beach SC-NC MSA

No changes planned for 2020.

Spartanburg MSA

No changes planned for 2020.

Sumter MSA

No changes planned for 2020.

Remainder of State

Chesterfield (45-025-0001) Site – Due to resource reallocation, the $PM_{2.5}$ Speciation was discontinued on January 2, 2019.

Ashton (45-029-0002) Site – This Site was discontinued on January 08, 2019.

Howard #3 (45-45-043-0011) Site – This Site was discontinued on April 3, 2019.

Long Creek (45-073-0001) Site – The SO_2 monitor has been put on a two-year rotating schedule and will begin operation on January 1, 2022.

Appendix E: EPA Correspondence

RB → MP Wall, to our files

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

OCT 25 2019

Received
OCT 28 2019
Bureau of Air Quality

Ms. Rhonda Thompson RBT
Chief
Bureau of Air Quality Control
South Carolina Department of Health and
Environmental Control
2600 Bull Street
Columbia, South Carolina 29201

Dear Ms. Thompson:

Thank you for submitting the state of South Carolina's 2019 annual ambient air monitoring network plan (Network Plan) dated July 1, 2019. The Network Plan is required by 40 Code of Federal Regulations (CFR) §58.10.

The EPA understands that the South Carolina Department of Health and Environmental Control (SC DHEC) provided the public a 30-day review period for each of the three submittals that are part of the Network Plan. It is the EPA's understanding that no comments on the Network Plan were received.

The Network plan proposed a number of changes to the SC monitoring network including:

- relocation of $PM_{2.5}$ monitoring in the Charleston, SC area; and
- establishment of a rotating SO_2 monitoring network in which existing special purpose monitoring sites will operate an SO_2 monitor on a every other two-year schedule (i.e., each monitor will operate for two years and then be shut down for two years to save resources).

The EPA approves the proposed monitoring network changes and the Network Plan. The monitoring in South Carolina will meet monitoring network design criteria except for the recent requirement for a second near-road nitrogen dioxide monitor in the Charlotte area, due to estimated population increases in the Charlotte area. The EPA is working with the Mecklenburg County Air Quality (MCAQ) agency to meet this requirement.

Details regarding the EPA's review of the Network Plan are provided in the enclosed comments. Thank you for working with us to monitor air pollution and promote healthy air quality in South Carolina. If you have any questions or concerns, please contact Gregg Worley at (404) 562-9141 or Ryan Brown at (404) 562-9147.

Sincerely,

for Gregg M. Worley

Kenneth L. Mitchell, Ph.D.

Acting Director
Air and Radiation Division

Enclosure

cc: Mr. Robert Brown
Division Director, Air Planning Development
and Outreach, SC DHEC

Ms. Connie Turner, Director
Division of Air Quality Analysis, SC DHEC

Ms. Renee Madden, Manager
Air Data Analysis and Support Section, SC DHEC

The Honorable William Harris
Chief of the Catawba Indian Nation

Mr. Scott Hansen
Director, Environmental Services, Catawba Indian Nation

CY 2019 State of South Carolina Ambient Air Monitoring Network Plan
The U.S. EPA Comments and Recommendations

This document contains the U.S. Environmental Protection Agency comments and recommendations regarding the state of South Carolina's 2019 ambient air monitoring network plan (Network Plan). Ambient air monitoring rules, which include regulatory requirements that address network plans, data certification, and minimum monitoring requirements, among other requirements, are found in 40 CFR Part 58. Minimum monitoring requirements for criteria pollutants are listed in 40 CFR Part 58, Appendix D. Minimum monitoring requirements are listed for ozone (O_3), particulate matter less than 2.5 microns ($PM_{2.5}$), particulate matter less than 10 microns (PM_{10}), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), carbon monoxide (CO), and lead (Pb).

The minimum monitoring requirements are based on core based statistical area (CBSA) boundaries as defined by the U.S. Office of Management and Budget (OMB), July 1, 2018, population estimates from the U.S. Census Bureau, and historical ambient air monitoring data. Minimum monitoring requirements for O_3, $PM_{2.5}$, and PM_{10} only apply to metropolitan statistical areas (MSAs) which are a subset of CBSAs. OMB currently defines 10 MSAs in the state of South Carolina. These MSAs and the respective July 1, 2018, population estimates from the U.S. Census Bureau are shown in Table 1.

Table 1: Metropolitan Statistical Areas and Populations

MSA Name	Population
Charlotte-Gastonia-Concord NC-SC	2,569,213
Greenville-Anderson-Mauldin, SC	906,626
Columbia, SC	832,666
Charleston-North Charleston-Summerville, SC	787,643
Augusta-Richmond County, GA-SC	604,167
Myrtle Beach-Conway-North Myrtle Beach, SC-NC	480,891
Spartanburg, SC	341,298
Hilton Head Island-Bluffton-Beaufort, SC	217,686
Florence, SC	204,961
Sumter, SC	106,512

Proposed Monitoring Network Changes

The EPA has approval authority for changes to regulatorily required state or local air monitoring stations (SLAMS). SLAMS include the ambient air quality monitoring sites and monitors that are required by Appendix D of 40 CFR part 58 and are needed for the monitoring objectives of Appendix D, including NAAQS comparisons, but may also serve other data purposes. However, the EPA does not need to approve changes made to special purpose monitors (SPMs), which are monitors designated by the monitoring agency as special purpose and these monitors do not count towards minimum monitoring requirements of 40 CFR part 58.

The South Carolina Department of Health and Environmental Control (SC DHEC) proposed numerous changes to its monitoring network in the Network Plan. Table 2 summarizes the requested discontinuations and relocations of monitors, and Table 3 summarizes the requested monitor startups. Specifics of each change and rationale are also contained in the following pollutant sections.

Some of the proposed SLAMS relocations and discontinuations were approved by the EPA in last year's Network Plan, but implementation of these network changes was postponed until 2020. These previously approved changes are listed in Tables 2 and 3, as well a newly proposed or not previously approved monitoring network changes.

Table 2: Monitors Proposed for Relocation or Discontinuation

AQS ID	Site Name	CBSA	Pollutant	Type	Comments
45-007-0005	Big Creek	Greenville-Anderson-Mauldin, SC	O_3	SLAMS	EPA supports this discontinuation and will review and make a final decision for the next network plan. Big Creek is proposed to shut down after 2020 O_3 season. The monitor will run for one year concurrently with the new Garrison Arena AQS ID 45-007-0006) site.
45-077-0002	Clemson	Greenville-Anderson-Mauldin, SC	O_3	SLAMS	Previously approved. Monitoring relocation to Garrison Arena (AQS ID 45-007-0006). Expected after 2019 O_3 season.
45-077-0003	Wolf Creek	Greenville-Anderson-Mauldin, SC	O_3	SPM	Previously approved SLAMS to discontinue as part of the re-designed Greenville area O_3 monitoring network. Has consistently measured lower concentrations than other monitors in the MSA. Operated 2019 as an SPM.
45-019-0048	FAA	Charleston-North Charleston-Summerville, SC	$PM_{2.5}$	SPM	Acknowledged. $PM_{2.5}$ monitoring for the Charleston area will be conducted at the to be established North Charleston Fire Station (AQS ID 45-019-0020).
45-019-0049	CPW	Charleston-North Charleston-Summerville, SC	$PM_{2.5}$	SLAMS	Approved. Will be relocated to North Charleston Fire Station (AQS ID 45-019-0020)
45-015-0002	Bushy Park	Charleston-North Charleston-Summerville, SC	O_3	SLAMS	Previously approved to relocate. Does not meet siting criteria. Moncks Corner site (AQS ID 45-015-1002) will be established as a replacement in Charleston CBSA.
45-063-0008	Irmo	Columbia, SC	Carbonyls, SVOCs, SO_2	SPM	Acknowledged. The SC DHEC is losing access to this site in 2020. SC DHEC is looking for a $PM_{2.5}$ replacement SLAMS site but will discontinue the other monitoring.
45-079-0007	Parklane	Columbia, SC	Pb	SLAMS	Approved. Discontinued 12/31/2018. Since 2016, Pb monitoring is no longer required at NCORE sites and the recorded concentrations have been low for years.
45-029-0002	Ashton	Walterboro, SC	$PM_{2.5}$	SLAMS	Previously approved. Monitor shut down January 2019.
45-043-0011	Howard High #3	None	PM_{10}	SPM	Acknowledged shutdown of PM_{10} SPM. Not minimally required monitoring and has measured low PM_{10} concentrations.

45-025-0001	Chesterfield	Columbia, SC	$PM_{2.5}$ speciation	SPM	Acknowledged. Discontinued January 2019 to use the sampler for speciation at the Parklane CSN site, where the current sampler was failing. Chesterfield is not part of the redesigned and funded CSN network, but Parklane is.
45-091-0008	York Landfill	Charlotte-Concord-Gastonia, NC-SC	SO_2	SPM	Acknowledged. Will no longer operate every year and will instead operate every other two years. Will be used to evaluate background SO_2 levels in the state.
45-019-0046	Cape Romain	Charleston-North Charleston, SC	SO_2	SPM	Acknowledged. Will no longer operate every year and will instead operate every other two years. Will be used to evaluate background SO_2 levels in the state.
45-079-0021	Congaree Bluff	Columbia, SC	SO_2	SPM	Acknowledged. Will no longer operate every year and will instead operate every other two years. Will be used to evaluate background SO_2 levels in the state.
45-073-0001	Long Creek	none	SO_2	SPM	Acknowledged. Will no longer operate every year and will instead operate every other two years. Will be used to evaluate background SO_2 levels in the state.

Table 3: Monitors Proposed for Startup

AQS ID	Site Name	CBSA	Pollutant	Type	Comments
45-007-0006	Garrison Arena	Greenville-Anderson-Mauldin, SC	O_3	SLAMS	Previously approved. Relocation of Clemson O_3 monitor. Approximately one mile southeast of the Clemson site. Expected to start for the 2020 ozone season.
45-015-1002	Moncks Corner National Guard	Charleston-North Charleston-Summerville, SC	O_3	SLAMS	Previously approved. O_3 monitor for Charleston MSA will be relocated from Bushy Park (45-015-0002). Rationale provided to show that this is in an area of expected maximum concentration. Expected to start for the 2020 ozone season.
45-019-0020	North Charleston Fire Station	Charleston-North Charleston-Summerville, SC	$PM_{2.5}$	SLAMS	Approved. Will meet $PM_{2.5}$ monitoring requirements for Charleston area. Replacement site for CPW (45-019-0049) and FAA (45-019-0048), which do not meet regulatory siting criteria.
45-091-0008	York Landfill	Charlotte-Concord-Gastonia, NC-SC	SO_2	SPM	Acknowledged. Will operate every other two years and not collect a complete design value. Will be used to evaluate background SO_2 levels in the state.
45-019-0046	Cape Romain	Charleston-North Charleston, SC	SO_2	SPM	Acknowledged. Will operate every other two years and not collect a complete design value. Will be used to

					evaluate background SO_2 levels in the state.
45-079-0021	Congaree Bluff	Columbia, SC	SO_2	SPM	Acknowledged. Will operate every other two years and not collect a complete design value. Will be used to evaluate background SO_2 levels in the state.
45-073-0001	Long Creek	none	SO_2	SPM	Acknowledged. Will operate every other two years and not collect a complete design value. Will be used to evaluate background SO_2 levels in the state.

Operating Schedules
40 CFR § 58.12

The monitoring network proposed in the Network Plan meets the required operating schedules for all continuous analyzers and all manual Pb, PM_{10}, $PM_{2.5}$, and $PM_{2.5}$ Speciation Trends Network (STN) monitors. The SC DHEC did not propose any changes to its operating schedules in the Network Plan.

Air Quality Index (AQI) Reporting
40 CFR §58.50

AQI reporting is required in MSAs with populations over 350,000. There are four MSAs in the state of South Carolina required to report an AQI. The SC DHEC reports AQI for these four MSAs and additional MSAs.

Table 4. AQI Reporting

MSAs Reporting
Columbia, SC
Charleston-North Charleston, SC
Florence-Darlington, SC
Greenville-Anderson-Mauldin, SC
Myrtle Beach-Conway-North Myrtle Beach, SC-NC
Augusta-Richmond County, GA-SC
Charlotte–Concord–Gastonia, NC-SC

The SC DHEC monitoring network satisfies the minimum AQI reporting requirements in 40 CFR Part 58.

National Core (NCore) Monitoring Network
40 CFR Part 58, Appendix D, 3

A requirement that each state operate at least one NCore site is found in 40 CFR Part 58, Appendix D, Section 3. The NCore site must measure, at a minimum, $PM_{2.5}$ particle mass using continuous and integrated/filter-based samplers, speciated $PM_{2.5}$, $PM_{10-2.5}$ particle mass, O_3, SO_2, CO, NO/NO_y, wind speed, wind direction, relative humidity, and ambient temperature.

Table 5. NCore Monitoring Sites

CBSAs	AQS IDs	Site Name	Requirement Met (Y/N)

Columbia, SC	45-079-0007	Parklane	Y

The NCore monitoring network described in the Network Plan meets all design criteria of 40 CFR Part 58.

O_3 Monitoring Requirements
40 CFR Part 58, Appendix D, Table D-2

Ambient air monitoring network design criteria for O_3 are found in 40 CFR Part 58, Appendix D, Section 4.1. This section requires a state, and where appropriate, local agencies operate O_3 sites for various locations depending upon area size and typical peak concentrations.

Table 6. Ozone Design Criteria – Minimum Required SLAMS Monitors

CBSAs	# Minimum ofiRequired SLAMS	# of SLAMS	# of SPMs or other regulatory monitors	Site Names (AQS IDs) of SLAMS	Requirement Met (Y/N)
Charlotte-Gastonia-Concord NC-SC[1]	2	6	1	York Landfill (45-091-0008) Garinger (37-119-0041) University Meadows (37-119-0046) Crouse (37-109-0004) Rockwell (37-159-0021) Monroe Middle School (37-179-0003)	Y
Greenville-Anderson-Mauldin, SC[2]	2	3	1	Big Creek (45-007-0005) Clemson CMS (45-077-0002)/Garrison Arena (45-007-0006) Hillcrest (45-045-0016)	Y
Columbia, SC	2	2	1	Parklane (45-079-0007) Sandhill (45-079-1001)	Y
Charleston-North Charleston-Summerville, SC	1	2	0	Bushy Park (45-015-0002)/Moncks Corner National Guard (45-015-1002)[3] Cape Romain (45-019-0046)	Y
Augusta-Richmond County, GA-SC[4]	2	4	0	Jackson Middle School (45-003-0003) Trenton (45-037-0001) Evans (13-073-0001) Augusta (13-245-0091)	Y
Myrtle Beach-Conway-North Myrtle Beach, SC-NC	1	1	0	Coastal Carolina (45-051-0008)	Y
Spartanburg, SC	0	1	0	North Spartanburg Fire Station #2 (45-083-0009)	Y
Florence, SC	1	1	0	Pee Dee Exp. Station (45-031-0003)	Y
Not in an MSA	0	0	2	None	Y

1) The requirements for the Charlotte-Gastonia-Concord NC-SC MSA are being met by monitors in both South Carolina and North Carolina

2) In the Greenville-Anderson-Mauldin, SC MSA, the Clemson CMS site and the Wolf Creek SPM site (AQS ID 45-077-0003 – shown in Table 26) will shut down once Garrison Arena site is operating.
3) In the Charleston-North Charleston-Summerville, SC MSA the Bushy Park site will shut down once Moncks Corner is operating,
4) Requirements for the Augusta-Richmond County, GA-SC MSA are being met by monitors in both South Carolina and Georgia.

The EPA approved last year's Network Plan that proposed to discontinue four O_3 monitors and to relocate two of these O_3 monitors to new O_3 monitoring sites. However, the two new O_3 monitoring sites were not established in time for the 2019 O_3 season. The two new sites, Garrison Arena site (AQS ID 45-007-0006) in the Greenville-Anderson-Maudlin, SC MSA and Moncks Corner National Guard site (AQS ID: 45-015-1002) in the Charleston-North Charleston-Summerville, SC MSA are expected to start operating for the 2020 O_3 season. For the 2019 O_3 season previously approved discontinued sites operated instead: Wolf Creek (AQS ID 45-077-0003) and Clemson (AQS ID 45-077-0002) in the Greenville area and Bushy Park (45-015-0002) in the Charleston area. The Big Creek (AQS ID 45-007-0005) monitor is proposed to operate concurrently with the new Garrison Area monitor for the 2020 O_3 season in the Greenville area. This concurrent data will be used to evaluate SC DHEC's plan to discontinue monitoring at the Big Creek site after the 2020 O_3 season. The EPA will evaluate the proposed discontinuation of Big Creek in the next network plan. The EPA appreciates and supports the SC DHEC operating Big Creek and Garrison Arena ozone concurrently for the 2020 O_3 season.

The SC DHEC O_3 monitoring network outlined in the Network Plan meets the minimum requirements found in 40 CFR Part 58, Appendix D, Table D-2 for all MSAs in South Carolina.

CO Monitoring Requirements
40 CFR Part 58, Appendix D, Section 4.2

Ambient air monitoring network design criteria for CO are found in 40 CFR Part 58, Appendix D, Section 4.2. This section requires CBSAs with populations over one million but less than 2.5 million to operate one CO monitor collocated with a near-road NO_2 monitor, by January 1, 2017.

Table 7. CO Design Criteria – Minimum Required SLAMS Near-Road Monitors

CBSA	# Minimum Required Near-Road CO	# Near-Road CO	Site Names (AQS IDs) of Existing Near-Road CO monitors	Requirement Met (Y/N)
Charlotte-Gastonia-Concord NC-SC*	1	1	Remount Rd (37-119-0045)	Y

* In the Charlotte-Gastonia-Concord NC-SC CBSA this requirement is met by a monitor operated in Charlotte, North Carolina by the Mecklenburg County Air Quality agency

The Regional Administrator required monitoring for CO are found in 40 CFR Part 58, Appendix D 4.2.2. The section states, "The Regional Administrators, in collaboration with states, may require additional CO monitors above the minimum number of monitors required in 4.2.1." There is no additional CO monitoring required at this time.

Table 8. CO Design Criteria – Minimum Required SLAMS RA Required Monitors

CBSA	# Minimum RA Required	# RA in Plan	Site Names (AQS IDs) of RA Required in Plan	Requirement Met (Y/N)

None	0	0	None	Y

The proposed CO monitoring network described in the Network Plan meets all design criteria of 40 CFR Part 58.

NO_2 Monitoring Requirements
40 CFR Part 58, Appendix D, 4.3

Ambient air monitoring network design criteria for NO_2 are found in 40 CFR Part 58, Appendix D, Section 4.3. There are three types of required NO_2 monitoring: near-road, area-wide, and Regional Administrator. These types of NO_2 monitoring are described in Sections 4.3.2, 4.3.3 and 4.3.4, respectively.

Ambient air monitoring design criteria for near-road NO_2 monitoring sites are found in 40 CFR Part 58, Appendix D, Section 4.3.2.

In the Charlotte-Gastonia-Concord NC-SC CBSA the MCAQ agency operates one near-road monitoring site in Charlotte, NC, the Remount site (AQS ID 37-119-0045). When the initial near-road monitoring network was funded by EPA and established the Charlotte area was below the 2.5 million population threshold for a second near-road NO_2 monitoring site. However, the recent Census population estimate for the Charlotte-Concord-Gastonia, NC-SC CBSA is just over 2.5 million people. The EPA is working with MCAQ on planning for and funding the establishment of a second near-road monitoring site in the Charlotte area.

No other CBSA in South Carolina is required to have near-road NO_2 monitoring, at this time.

Table 9. NO_2 Design Criteria - Minimum Required SLAMS Near-Road Monitors

CBSA	# Minimum Required Near-Road NO_2	# Near-Road NO_2 in Plan	Site Names (AQS IDs) of Existing NO_2 Near-Road in Plan	Requirement Met (Y/N)
Charlotte-Gastonia-Concord NC-SC*	2	1	Remount Rd (37-119-0045)	N*

* In the Charlotte-Gastonia-Concord NC-SC CBSA one near-road monitoring site is operated in Charlotte, NC by the Mecklenburg County Air Quality (MCAQ) agency. Since recent estimated population increases in the Charlotte area, the EPA is working with MCAQ on funding and establishing a second near-road NO_2 site.

Ambient air monitoring network design criteria for area-wide NO_2 sites are found in Section 4.3.3 of Appendix D to 40 CFR Part 58. The Garinger High School site (AQS ID 37-119-0041) operated by the MCAQ fulfills the area-wide NO_2 monitoring requirement for the Charlotte-Gastonia-Concord NC-SC CBSA. No other CBSA in South Carolina is required to have area-wide NO_2 monitoring. SC DHEC operates area-wide NO_2 monitoring in the Columbia area and SPM NO_2 monitoring in the Charleston area.

Table 10. NO_2 Design Criteria - Minimum Required SLAMS Area-Wide Monitors

CBSA	# Minimum Required Area-Wide NO_2	# Area-Wide NO_2 SLAMS	# SPM NO_2	Site Names (AQS IDs) of Area-Wide NO_2 SLAMS	Requirement Met (Y/N)
Charlotte-Gastonia-Concord NC-SC*	1	1		Garinger High School site (37-119-0041)	Y
Columbia, SC	0	1	1	Parklane (45-079-0007)	Y
Charleston-North Charleston, SC	0	0	2		Y

* In the Charlotte-Gastonia-Concord NC-SC CBSA this requirement is met by a monitor operated in Charlotte, North Carolina; Table 26 lists the non-SLAMS monitoring in SC

Ambient air monitoring network design criteria for Regional Administrator required NO_2 monitoring, often referred to as RA-40 monitoring, are found in 40 CFR Part 58, Appendix D, section 4.3.4. Under these provisions, Regional Administrators must require a minimum of 40 additional NO_2 monitoring stations nationwide, with a primary focus on siting these monitors in locations to protect susceptible and vulnerable populations. Previously, the EPA selected the Greenville Employment Security Commission (ESC) site (AQS ID 450-045-0015) as a location for an RA-40 NO_2 monitoring site. The full list of NO_2 monitors identified by EPA's Regional Administrators can be found on EPA's website at http://www.epa.gov/ttnamti1/svpop.html.

Table 11. NO_2 Design Criteria - Minimum Required SLAMS RA-40 Monitors

CBSA	# Minimum Required RA-40	# RA-40 in Plan	Site Names (AQS IDs) of RA-40 NO_2	Requirement Met (Y/N)
Greenville-Anderson-Mauldin, SC	1	1	Greenville ESC site (450-045-0015)	Y

Except for near-road NO_2 monitoring in the Charlotte area, the NO_2 monitoring network described by the SC DHEC in its Network Plan meets all design criteria of 40 CFR Part 58.

SO_2 Monitoring Requirements
40 CFR Part 58, Appendix D, 4.4

Ambient air monitoring network design criteria for SO_2 are found in 40 CFR Part 58, Appendix D, Section 4.4. This section requires that the population weighted emissions index (PWEI) be calculated by states for each CBSA. As a result, the SO_2 monitoring site(s) required in each CBSA will satisfy minimum monitoring requirements if the monitor(s) is sited within the boundaries of the parent CBSA and is of the following site types: population exposure, maximum concentration, source-oriented, general background, or regional transport. A SO_2 monitor at an NCore station may satisfy minimum

monitoring requirements if that monitor is located within a CBSA with minimally required monitors consistent with Appendix D, Section 4.4.

Based upon PWEIs calculated using the latest population estimates and 2014 emission inventory data, the minimum numbers of monitors required for the CBSAs in South Carolina are summarized in Table 12.

Table 12. SO_2 Design Criteria – Minimum Required SLAMS PWEI Monitors

CBSA	2018 population estimate	2014 NEI Emissions (Tons per year)	PWEI	# Minimum Required PWEI SO_2 monitors	# SO_2 SLAMS in Plan	Site Names (AQS IDs) of Existing SO_2 monitors in Plan	Requirement Met (Y/N)
Charleston-North Charleston-Summerville, SC	787,643	15,784	12,432	1	1	Jenkins Ave Fire Station (45-019-0003)	Y
Charlotte-Gastonia-Concord, NC-SC*	2,569,213	7,624	19,588	1	1	Garinger High School (37-119-0041)*	Y
Columbia, SC	832,666	17,769	14,796	1	1	Parklane (45-079-0007)	Y
Greenville-Anderson-Mauldin, SC	906,626	2,928	2,655	0	1	Greenville ESC (45-045-0015)	Y

* In the Charlotte-Gastonia-Concord NC-SC CBSA this requirement is met by a monitor operated in Charlotte, North Carolina by the Mecklenburg County Air Quality agency

The SO_2 monitoring network outlined in the Network Plan meets the SO_2 PWEI requirements specified in 40 CFR Part 58, Appendix D, Section 4.4.

The EPA finalized the SO_2 Data Requirements Rule (DRR) (see 80 *Federal Register*, No. 162) on August 21, 2015. This rule requires characterization of the air quality near sources with SO_2 emissions greater than 2,000 tons per year by conducting ambient air monitoring or modeling. On January 15, 2016, the SC DHEC submitted to the EPA a list of eight sources in the state around which SO_2 air quality must be characterized. These eight sources were characterized using modeling and/or took federally enforceable emissions limits. The SC DHEC is not operating any SO_2 monitoring sites to meet the DRR requirements.

Table 13. SO_2 Design Criteria – Data Requirement Rule Monitors

CBSA	# Minimum Required	# Required in Plan	Site Names (AQS IDs) of Existing SO_2 DRR monitors	Requirement Met (Y/N)
None	0	0	None	Y

The Regional Administrator may require additional SO_2 monitoring stations above the minimum number of monitors required in 40 CFR Part 58, Appendix D, Section 4.4.2, where the minimum monitoring requirements are not sufficient to meet monitoring objectives. There is no additional SO_2 monitoring required at this time.

Table 14. SO_2 Design Criteria – Minimum Required SLAMS RA Monitors

CBSA	# Minimum RA Required	# RA Required in Plan	Site Names (AQS IDs) of RA required SO_2 monitors	Requirement Met (Y/N)
None	0	0	None	Y

The Network Plan proposes to operate four of the current SO_2 SPMs every other two years. Two sites will be operated during the same two years. The EPA supports this change as it will save the SC DHEC monitoring resources and these four monitors have recorded concentrations well below the NAAQS.

The EPA recommends that the SC DHEC evaluate the listed monitoring objective for Cape Romain, which is "source oriented". The last three design values for the Cape Romain SO_2 monitor have been 4 ppb compared to a standard of 75 ppb. The SO_2 design value of 4 ppb is similar to SO_2 monitors in South Carolina with background or transport monitoring objectives. The EPA also recommends that the SC DHEC consider operating the rotating background SO_2 monitors in accordance with 40 CFR 58 Appendix B, if the primary data use for these monitors is for PSD modeling or permitting.

Table 15. SO_2 Rotating Background SO_2 Monitoring

CBSA	Site Names (AQS IDs)	Frequency of Operation	Next Expected Years of Operation	Monitoring Objective in Network Plan	2018 Design Value (ppb)
Charlotte-Concord-Gastonia, NC-SC	York Landfill (45-091-0008)	Every other 2 years	2020-2021	Upwind background	2*
Charleston-North Charleston, SC	Cape Romain (45-019-0046)	Every other 2 years	2020-2021	Source oriented	4
Columbia, SC	Congaree Bluff (45-079-0021)	Every other 2 years	2022-2023	General background	3
None	Long Creek (45-073-0001)	Every other 2 years	2022-2023	Regional transport	2

*The design value for York Landfill is incomplete. This monitor has not operated for a complete 3 years. However, it was a replacement site for the previously nearby site, York CMS (AQS ID 45-091-0006), which recorded similar SO_2 concentrations to those measured at York Landfill.

The proposed SO_2 monitoring network described in the Network Plan meets all design criteria of 40 CFR Part 58.

Pb Monitoring Requirements
40 CFR Part 58, Appendix D, 4.5

The monitoring requirements for Pb found at 40 CFR Part 58, Appendix D, Section 4.5 require that at a minimum, there must be one source-oriented SLAMS site located to measure the maximum Pb concentration in ambient air resulting from each non-airport Pb source which emits 0.50 or more tons per year and from each airport which emits 1.0 or more tons per year.

Although South Carolina has no sources that exceed the emissions thresholds for Pb monitoring, the SC DHEC and Johnson Control Battery Group conduct source-oriented ambient Pb monitoring at three sites around the Florence Recycling Center in Florence, South Carolina. This monitoring is comparable to the NAAQS. The company and the SC DHEC conduct this monitoring under terms of a settlement agreement reached with several petitioners who commented on the construction permit for the facility. Locations for the monitoring sites were selected based upon an agreement between the company and the stakeholders.

Table 16. Pb Design Criteria – Minimum Required Source-Oriented Monitors

Source	CBSA	# Minimum Required Source-Oriented Pb monitoring	# Source Oriented Pb sampling sites in Plan	Site Names (AQS IDs) of Existing Source-Oriented Pb in Plan	Requirement Met (Y/N)
Johnson Controls Incorporated*	Florence, SC	0	3	The JCI Railroad (45-041-8001) The JCI Entrance (45-041-8002) JCI Woods (45-041-8003)	Y

*This monitoring is not minimally required by EPA rules, but is part of a settlement agreement between SC DHEC, the facility, and community groups. SC DHEC operates these samplers as SPMs to evaluate Pb NAAQS compliance.

On March 28, 2016, the EPA published changes in the ambient air monitoring rules for the NCore network design and removed Pb monitoring at NCore sites from the requirements (81 FR 17248). This rule became effective on April 27, 2016. SC DHEC continued to operate Pb monitoring at its NCORE site, Parklane (AQS ID 45-079-0007), until December 31, 2018. The EPA supports the SC DHEC's discontinuation of Pb monitoring at Parklane, since this monitoring is no longer required and Pb concentrations measured were well under the standard.

The Pb collocation requirements found in 40 CFR Part 58, Appendix A, 3.4.4. Those requirements include that: 15 percent of the primary monitoring (not counting non-source oriented NCore sites in the primary quality assurance organization (PQAO)) are collocated and have at least one collocated quality control monitor (if the total number of monitors is less than three). These collocation requirements are assessed at the PQAO level.

Table 17. Pb Design Criteria – Minimum Required Collocated Monitors

PQAO	# Minimum Required Collocated	# Collocated in Plan	Site Names (AQS IDs) of Collocated Sites in Plan	Requirement Met (Y/N)
SC DHEC	1	1	JCI Entrance (45-041-8002)	Y

The Pb monitoring network described in the Network Plan meets all design criteria of 40 CFR Part 58.

PM_{10} Monitoring Requirements
40 CFR Part 58, Appendix A, 3.3.1
40 CFR Part 58, Appendix D, Table D-4

Ambient air monitoring network design criteria for PM_{10} are found in 40 CFR Part 58, Appendix D, Section 4.6. Table D-4, in this section, indicates the approximate number of PM_{10} stations required in MSAs to characterize national and regional PM_{10} air quality trends and geographical patterns.

Table 18. PM_{10} Design Criteria – Minimum Required SLAMS Monitors

MSA	# Minimum Required SLAMS sites	# SLAMS sites	# of SPMs or other regulatory monitoring sites	Site Names (AQS IDs) of Existing SLAMS in Plan	Requirement Met (Y/N)
Charlotte-Gastonia-Concord, NC-SC[1]	2	2	0	Montclaire (37-119-0042)[1] Garinger (37-119-0041)	Y
Augusta-Richmond County, GA-SC[2]	1[2]	1	0	Augusta (13-245-0091)[2]	Y
Greenville-Anderson-Mauldin, SC	1	1	0	Greenville ESC (45-045-0015)	Y
Columbia, SC	1	1	1	Cayce City Hall (45-063-0010)	Y
Charleston-North Charleston-Summerville, SC	1	1	0	Jenkins Ave. Fire Station (45-019-0003)	Y
Not in an MSA	0	0	1		Y

1) In the Charlotte-Gastonia-Concord NC-SC CBSA this requirement is met by monitors operated in Charlotte, North Carolina by the Mecklenburg County Air Quality agency. The Montclaire site has shutdown due to site access issues and the EPA is working with MCAQ to establish a new PM_{10} site in Charlotte by 2020.
2) In the Augusta-Richmond County, GA-SC MSA the requirement is being met by a monitor operated in Georgia by the Georgia Environmental Protection Division; see the EPA's determination below for the Augusta minimum monitoring requirement.
*Table 26 lists the non-SLAMS monitoring in SC

In the Augusta-Richard County, GA-SC MSA, the Augusta (AQS ID 13-245-0091) PM_{10} site measured one exceedance of the NAAQS on January 25, 2017. According to information provided by the GA EPD, the exceedance was possibly due to smoke from prescribed burning at Fort Gordon. The manual PM_{10} sampler that recorded the exceedance was operating on a 1-in-6 day sampling schedule. Because the PM_{10} NAAQS design value is based on estimated exceedances, this one exceedance resulted in a violating 2016-2018 design value for the site. On October 1, 2017, Georgia EPD replaced the manual PM_{10} sampler at the site with a continuous PM_{10} sampler.

The PM_{10} minimum monitoring requirements found in 40 CFR Part 58, Appendix D, Table D-4 indicate that the minimum number of PM_{10} monitors for the MSA would increase if the area went from low concentration (areas where ambient PM_{10} data show ambient concentrations less than 80 percent of the PM_{10} NAAQS) to medium concentration (exceeding 80 percent of the PM_{10} NAAQS) or high concentration (exceeding the PM_{10} NAAQS by 20 percent or more). The EPA believes that given the long-term record of low PM_{10} concentrations in the Augusta CBSA, one PM_{10} continuous monitor in the area is sufficient and the EPA considers the August MSA to be an area of low concentration. However, should the monitor measure future exceedances or violations of the PM_{10} NAAQS, the number of required PM_{10} monitors in the area may need to be reconsidered.

It is the EPA's understanding that the SC DHEC discontinued PM_{10} monitoring at the Howard High #3 site (AQS ID 45-043-0011), in April 2019. The Howard High monitor was a SPM, the PM_{10} measurements have been well below the standard, and PM_{10} monitoring is not minimally required for this area, Georgetown, SC. SPMs do not require the EPA's approval to discontinue. The SC DHEC discussed this shutdown with EPA staff and shutdown the monitoring in April of 2019 to save monitoring resources.

The PM_{10} collocation requirements for manual methods found in 40 CFR Part 58, Appendix A, 3.3.4. Those requirements include that: Fifteen percent of each network of manual PM_{10} methods (at least one site) must be collocated, and the sites with collocated monitors should be among those measuring annual mean concentrations in the highest 25 percent of the network. These collocation requirements are assessed at the PQAO level.

Table 19. PM_{10} Design Criteria – Minimum Required Collocated Monitors

PQAO	# Sites with Manual PM_{10} Method	# Minimum Required Collocated Monitors	# Collocated PM_{10} Monitors	Site Names (AQS IDs) of Collocated Sites in Plan	Requirement Met (Y/N)
SC DHEC	2	1	1	Chesterfield (45-025-0001)	Y

The proposed PM_{10} monitoring network described in the Network Plan meets all design criteria of 40 CFR Part 58.

$PM_{2.5}$ Monitoring Requirements
40 CFR Part 58, Appendix A, 3.2.3
40 CFR Part 58, Appendix D, Table D-5

Ambient air monitoring network design criteria for $PM_{2.5}$ are found in 40 CFR Part 58, Appendix D, Section 4.7. This section requires the state and, where applicable, local agencies must operate the minimum number of required $PM_{2.5}$ SLAMS sites listed in Appendix D, Table D-5.

Table 20. $PM_{2.5}$ Design Criteria – Minimum Required SLAMS Monitors

CBSAs	# Minimum of Required SLAMS	# of $PM_{2.5}$ SLAMS Sites	# of SPM or Other Regulatory Sites	Site Names (AQS IDs) of $PM_{2.5}$ SLAMS	Requirement Met (Y/N)
Charlotte-Gastonia-Concord NC-SC[1]	2	4	1	Garinger (37-119-0041) Montclaire (37-119-0042)[2] Remount (37-119-0045) Rockwell (37-159-0021)	Y
Greenville-Anderson-Mauldin, SC	1	2	0	Greenville ESC (45-045-0015) Hillcrest (45-045-0016)	Y
Columbia, SC	1	1	0	Parklane (45-079-0007)	Y
Charleston-North Charleston-Summerville, SC	1	1[3]	1[3]	CPW (45-019-0049)/North Charleston Fire Station (45-019-0020)[3]	Y
Augusta-Richmond County, GA-SC[4]	1	1	1	Augusta (13-245-0091)	Y
Spartanburg, SC	0	1	0	T.K. Gregg (45-083-0011)	Y
Florence, SC	0	1	0	Williams Middle School (45-041-0003)	Y
Not in an MSA	0	1	1	Chesterfield (45-025-0001)	Y

1) In the Charlotte-Gastonia-Concord NC-SC CBSA this requirement is met by monitors in North Carolina;
2) The Montclaire $PM_{2.5}$ monitor is being relocated for 2020 by the MCAQ agency;
3)The SC DHEC is planning to consolidate the FAA and CPW sites into the North Charleston Fire Station Monitoring Site by January 1, 2020. Either FAA and/or the CPW Site will run concurrently for one year with the North Charleston Fire Station site. FAA is currently operated as an SPM site and is summarized in Table 26 below;
4) In the Augusta-Richmond County, GA-SC MSA the requirement is being met by a monitor operated in Georgia;

The Network Plan proposes to establish a new $PM_{2.5}$ monitoring site in the Charleston-North Charleston-Summerville, SC MSA, the North Charleston Fire Station site (AQS ID 45-019-0020), which will replace the existing $PM_{2.5}$ sites in the area. Both existing $PM_{2.5}$ sites in the area, CPW (AQS ID 45-019-0049) and FAA (AQS ID 45-019-0048), in the Charleston area have issues with unobstructed air flow and proximity to tree drip lines and do not meet regulatory siting criteria. The SC DHEC has been unable to coordinate with the property owners at these sites to trim or remove obstructing trees.

Thus, the SC DHEC has worked with EPA staff to identify a replacement location for $PM_{2.5}$ monitoring in the Charleston area that will meet siting criteria. EPA staff have visited the proposed North Charleston Fire Station site and confirmed that siting criteria will be met. The EPA supports the SC DHECs decision to locate the new site to the "Neck" area of the Charleston region. The Neck area is near significant marine port operations and next to communities that have historically had concerns about air quality and their proximity to local industry. The CPW and FAA sites most recent annual design values are 60% of the NAAQS (7.2 ug/m^3). The new site is closer to industry and port activity and may potentially measure higher $PM_{2.5}$ concentrations than the CPW and FAA monitors.

The CPW and FAA sites will discontinue $PM_{2.5}$ monitoring once the North Charleston Fire Station has been established. SC DHEC plans to operate $PM_{2.5}$ one of these sites for one year concurrently with the new North Charleston Fire Station site to compare the data. Thus, the EPA approves the shutdown of the CPW site and the startup of the North Charleston Fire Station site. The FAA site has been deemed special purpose by the SC DHEC and does not require the EPA approval to discontinue. The Charleston MSA is minimally required one $PM_{2.5}$ monitor and the North Charleston Fire Station site will meet this requirement.

40 CFR Part 58, Appendix A, Section 3.2.3 states 15 percent of each network of manual $PM_{2.5}$ methods (at least one site) must be collocated. 40 CFR Part 58, Appendix A, Section 3.2.3.1 states for each distinct monitoring method designation (FRM or FEM) that a PQAO is using for a primary monitor, the PQAO must have 15 percent of the primary monitors of each method designation collocated; and have at least one collocated quality control monitor. The first collocated monitor must be a designated FRM monitor.

40 CFR Part 58, Appendix A, Section 3.2.3.2 states for each primary monitor designated as an FEM used by the PQAO, 50 percent of the monitors designated for collocation (or the first if only one collocation is necessary) shall be collocated with a FRM quality control monitor and 50 percent of the monitors shall be collocated with a monitor having the same method designation as the FEM primary monitor.

Table 21. $PM_{2.5}$ Design Criteria – Minimum Required Collocated Monitors

PQAO	Method	# Primary Monitors	# Minimum Required Collocated Monitors	# Collocated Monitors in Plan	Site Names (AQS IDs) of Collocated Sites in Plan	Requirement Met (Y/N)
SC DHEC	2025 $PM_{2.5}$ Sequential Air Sampler w/VSCC (FRM)	8	1	3	T.K. Gregg site (45-083-0011), Parklane (45-079-0007); Hillcrest (45-045-0016)	Y
SC DHEC	Thermo 1405-F FDMS w/VSCC	3	1	2	Greenville ESC (45-045-0015) Irmo (45-063-0008)	Y

The proposed $PM_{2.5}$ monitoring network described in the Network Plan meets all design criteria of 40 CFR Part 58.

$PM_{2.5}$ Near-road Monitoring Requirements
40 CFR Part 58, Appendix D, Section 4.7.1(b)(2)

Regulatory requirements in 40 CFR Part 58, Appendix D, 4.7.1(b)(2) require that "CBSAs with a population of 1,000,000 or more persons, at least one $PM_{2.5}$ monitor is to be collocated at a near-road NO_2 station." $PM_{2.5}$ near-road monitoring is required in the Charlotte-Gastonia-Concord NC-SC CBSA.

Table 22. $PM_{2.5}$ Design Criteria - Minimum Required SLAMS Near-Road Monitors

CBSA	# Minimum Required Near-Road	# Near-Road $PM_{2.5}$	Site Names (AQS IDs) of Existing Near-Road in Plan	Requirement Met (Y/N)
*Charlotte-Gastonia-Concord NC-SC	1	1	Remount (37-119-0045)	Y

*This requirement is met by a monitor operated in Charlotte, North Carolina by the Mecklenburg County Air Quality agency

The near-road $PM_{2.5}$ monitoring network described in the Network Plan meets design criteria of 40 CFR Part 58.

$PM_{2.5}$ Continuous Monitoring Requirements
40 CFR Part 58, Appendix D, 4.7.2

Regulatory provisions for continuous $PM_{2.5}$ monitoring require that "The State, or where appropriate, local agencies must operate continuous $PM_{2.5}$ analyzers equal to at least one-half (round up) of the minimum required sites listed in Table D–5 of this Appendix. At least one required continuous analyzer in each MSA must be collocated with one of the required FRM/FEM/ARM [Federal Reference Method/Federal Equivalent Method/Approved Regional Method] monitors, unless at least one of the required FRM/FEM/ARM monitors is itself a continuous FEM or ARM monitor in which case no collocation requirement applies."

The five MSAs listed in Table 23, below, have minimum continuous monitoring requirements. These requirements are met in all MSAs in the State. The SC DHEC also operates continuous $PM_{2.5}$ monitors in the Florence, SC MSA and Spartanburg, SC MSA.

Table 23. $PM_{2.5}$ Design Criteria – Continuous monitors

MSA	# Minimum Required Continuous $PM_{2.5}$	# Continuous $PM_{2.5}$ Monitors	Site Names (AQS IDs) of Existing Continuous $PM_{2.5}$ Monitors	Requirement Met (Y/N)
Charlotte-Gastonia-Concord NC-SC*	1	4	Garinger (37-119-0041) Montclaire (37-119-0042) Remount (37-119-0045) Rockwell (37-159-0021) Catawba Longhouse (45-091-8801)	Y
Greenville-Anderson-Mauldin, SC	1	1	Greenville ESC (45-045-0015)	Y
Columbia, SC	1	2	Irmo (45-063-0008) Parklane (45-079-0007)	Y
Charleston-North Charleston-Summerville, SC	1	2	North Charleston Fire Station (45-019-0020); Cape Romain (45-019-0046); CPW (45-019-0049)	Y
Augusta-Richmond County, GA-SC	1	1	Trenton (45-037-0001)	Y
Florence, SC	0	1	Williams Middle School (45-041-0003)	Y
Spartanburg, SC MSA	0	1	T.K. Gregg (45-083-0011)	Y
Not in an MSA	0	1	Longcreek (45-073-0001)	Y

* In the Charlotte-Gastonia-Concord NC-SC CBSA this requirement is met by monitors operated in Charlotte, NC by the Mecklenburg County Air Quality agency, a monitor operated in South Carolina by the Catawba Indian Nation, and a monitor operated by the North Carolina Division of Air Quality in Rowan County, NC.

The continuous $PM_{2.5}$ monitoring network described in the Network Plan meets all design criteria of 40 CFR Part 58.

$PM_{2.5}$ Background and Transport Sites
40 CFR Part 58, Appendix D, 4.7.3

40 CFR Part 58, Appendix D, Section 4.7.3 requires that "Each State shall install and operate at least one $PM_{2.5}$ site to monitor for regional background levels and at least one $PM_{2.5}$ site to monitor for regional transport."

Table 24. $PM_{2.5}$ Regional Background and Transport Monitors

Requirement	# Minimum Required	# in Plan	Site Names (AQS IDs) of SLAMS in Plan	Requirement Met (Y/N)
Background	1	1	Cape Romain (45-019-0046)	Y
Transport	1	1	Chesterfield (45-025-0001)	Y

It is the EPA's understanding that the SC DHEC is working with the U.S. Fish and Wildlife Service, which owns the Cape Romain site, to resolve recently identified regulatory siting criteria issues for the Cape Romain site.

The SC DHEC has satisfied the requirements of 40 CFR Part 58 for $PM_{2.5}$ regional background and transport sites.

$PM_{2.5}$ Chemical Speciation Network (CSN)
40 CFR Part 58, Appendix D, 4.7.4

Monitoring requirements in 40 CFR Part 58, Appendix D, Section 4.7.4 state that each State shall conduct chemical speciation monitoring and analyses at sites designated to be part of the $PM_{2.5}$ Speciation Trends Network (STN). The selection and modification of these STN sites must be approved by the Administrator. The $PM_{2.5}$ CSN includes STN stations and supplemental speciation stations that provide chemical species data of fine particulate.

Table 25. $PM_{2.5}$ Chemical Speciation Network – Non-SLAMS Monitors

CBSA	AQS IDs (site name) of CSN Monitor
Columbia, SC	Parklane (45-079-0007)

In 2014, the EPA conducted an assessment of the CSN in an effort to optimize and create a network that is sustainable going forward. As a result of this assessment, the EPA defunded a number of monitoring sites, eliminated the CSN $PM_{2.5}$ mass measurement, reduced the frequency of carbon blanks, reduced sample frequency at monitoring sites, and reduced the number of icepacks in shipments during the cooler months of the year.

In 2015, the EPA defunded two CSN monitors at sites in South Carolina including the Chesterfield (AQS ID 45-025-0001) speciation monitor. However, after the assessment SC DHEC chose to continue operating the Chesterfield speciation monitor. In December 2018, the DHEC decided to, in consultation with EPA staff, to discontinue collecting $PM_{2.5}$ speciation data at Chesterfield. Speciation monitoring at the Parklane (AQS ID 45-079-0007) site was identified in EPA's 2014 assessment as being of higher value than speciation measurements at Chesterfield. The SC DHEC continues to operate a $PM_{2.5}$ speciation monitor at Parklane. The EPA supports SC DHEC's decision to discontinue speciation monitoring at Chesterfield at the end of 2018. The CSN monitoring in South Carolina still meets the recommendations of EPA's 2014 CSN assessment.

Photochemical Assessment Monitoring Station (PAMS)
40 CFR Part 58, Appendix D, 5.0

With the promulgation of a new O_3 NAAQS on October 1, 2015, the EPA finalized changes to the PAMS requirements. The EPA is working on a proposed rule that will provide state and local agencies an additional two years from the current implementation date of June 1, 2019 to implement the PAMS program requirements.

The South Carolina NCore site, Parklane (AQS ID 45-079-0007), is not required to operate PAMS monitoring since the Columbia CBSA's population is less than one million. The PAMS requirement is met by the state.

Air Toxics Monitoring Network

As part of the National Air Toxics Trends Station (NATTS) network, SC DHEC samples for metals, semi-volatile organic compounds, carbonyls, and volatile organic compounds at the Chesterfield monitoring site (AQS ID 45-025-0001). SC DHEC also collects samples for air toxics in the Columbia, SC MSA at the Parklane (AQS ID 45- 079-0020) and State Hospital (AQS ID 45-079-0020) sites. The collection and analysis of air toxics samples at Chesterfield is conducted in accordance with SC DHEC's EPA approved NATTS quality assurance project plan (QAPP). Air toxic sampling at Parklane and State Hospital is conducted at SC DHEC's discretion and not collected under an EPA approved QAPP. The EPA recommends that SC DHEC develop a QAPP for this sampling, if there currently is not one.

Non-SLAMS Monitoring

The Network Plan also includes the following non-SLAMS monitoring summarized in Table 26. These monitors include criteria monitoring comparable to the NAAQS, continuous $PM_{2.5}$ monitoring used for the AQI, air toxics monitoring, and tribal monitoring conducted by the Catawba Indian Nation. Many of these monitors have been designated special purpose by SC DHEC.

Table 26. Non-SLAMS Monitors

CBSA	Pollutant	Site Name (AQS ID) of Non-SLAMS Monitor in Plan	Monitor Type	NAAQS Comparable
Charleston-North Charleston-Summerville, SC	$PM_{2.5}$ continuous for AQI	CPW (45-019-0049)/North Charleston Fire Station (45-019-0020)[1]	SPM	No
Charleston-North Charleston-Summerville, SC	$PM_{2.5}$	FAA (45-019-0048)[1]	SPM	Yes
Charleston-North Charleston-Summerville, SC	NO_2	Cape Romain (45-019-0046) Jenkins Ave. Fire Station (45-019-0003)	SPM	Yes
Charlotte-Gastonia-Concord, NC-SC[2]	$PM_{2.5}$ continuous; O_3	Catawba Longhouse (45-091-8801)[2]	Tribal	Yes
Columbia, SC	PM_{10}, SVOCs	Parklane (45- 079-0020)	SPM	PM_{10} – Yes; No NAAQS for SVOCs
Columbia, SC	$PM_{2.5}$ continuous	IRMO (45-063-0008)	SPM	Yes
Columbia, SC	O_3	Congaree Bluff (45-079-0021)	SPM	Yes – designated by SC to only be representative of O_3 in the Congaree national park
Columbia, SC	VOCs, Carbonyls	State Hospital (45-079-0020)	SPM	No NAAQS for VOCs and Carbonyls
Greenville-Anderson-Mauldin, SC	$PM_{2.5}$ Continuous	Greenville ESC (45-045-0015)	SPM	Yes

Greenville-Anderson-Mauldin, SC	O_3	Wolf Creek (45-077-0003)[3]	SPM	Yes
Augusta-Richmond County, GA-SC	$PM_{2.5}$	Trenton (45-037-0003)	SPM	Yes
Spartanburg, SC	$PM_{2.5}$ continuous for AQI	T K Gregg (45-083-0011)	SPM	No
Florence, SC	Pb	The JCI Railroad (45-041-8001) The JCI Entrance (45-041-8002) JCI Woods (45-041-8003)	SPM	Yes
Not in an MSA	PM_{10}, O_3, Carbonyls, VOCs, SVOCs	Chesterfield (45-025-0001)	SPM	PM_{10}, O_3 -Yes; No NAAQS for Carbonyls, VOCs, SVOCs
Not in an MSA	$PM_{2.5}$ continuous for AQI, O_3	Longcreek (45-073-0001)	SPM	O_3 – Yes; $PM_{2.5}$ – No

1) The SC DHEC is planning to consolidate the FAA and CPW sites into the North Charleston Fire Station Monitoring Site by January 1, 2020. Either FAA and/or the CPW Site will run concurrently for one year with the North Charleston Fire Station site. FAA is currently operated as an SPM site.
2) Monitoring at the Catawba Longhouse site is conducted by the Catawba Indian Nation and comparable to the NAAQS.
3) The Wolf Creek ozone site will discontinue once the Garrison Arena site is operating.

Memoranda of Agreement (MOA) with Neighboring State and Local Air Monitoring Agencies 40 CFR Part 58, Appendix D, 2 (e)

Section 2 (e) of Appendix D to 40 CFR 58 states:

> "The EPA recognizes that State or local agencies must consider MSA/CSA boundaries and their own political boundaries and geographical characteristics in designing their air monitoring networks. The EPA recognizes that there may be situations where the EPA Regional Administrator and the affected State or local agencies may need to augment or to divide the overall MSA/CSA monitoring responsibilities and requirements among these various agencies to achieve an effective network design. Full monitoring requirements apply separately to each affected State or local agency in the absence of an agreement between the affected agencies and the EPA Regional Administrator."

The SC DHEC maintains MOAs to address minimum monitoring requirements with the GA EPD, the North Carolina Division of Air Quality of Environmental Quality (NC DAQ), and the MCAQ agency. These MOAs are summarized below.

Table 27. MOAs to meet monitoring requirements for CBSAs that cross jurisdictional boundaries

Affected CBSA/MSA	Monitoring Agencies on the MOA	Pollutants	Date of Agreement	Expiration
Augusta-Richmond County, GA-SC MSA	SC DHEC GA EPD	PM_{10}, $PM_{2.5}$, O_3, and other criteria pollutants as necessary	January 2017	Reviewed every 10 years
Charlotte-Concord-Gastonia NC-SC MSA	SC DHEC NC DAQ MCAQ	Adequate criteria pollutant monitoring required by 40 CFR 58 Appendix D	July 1, 2016	Reviewed every 10 years

Myrtle Beach-Conway-North Myrtle Beach MSA	SC DHEC NC DAQ	O_3 and other criteria pollutants as necessary	July 1, 2015	Reviewed every 10 years

The EPA approves of the SC DHEC's agreements to share regulatory monitoring requirements for the Augusta, Charlotte, and Myrtle Beach areas.

Monitoring Siting Criteria and Site Assessments
40 CFR Part 58, Appendix A, B, C, D, and E

In reference to the Network Plan, 40 CFR §58.10(a)(1) states:

> "The plan shall include a statement of whether the operation of each monitor meets the requirements of appendices A, B, C, D, and E of this part, where applicable. The Regional Administrator may require additional information in support of this statement."

The Network Plan includes assessment information for all monitoring sites. The EPA appreciates the inclusion of this information and the work that the SC DHEC has done to evaluate siting criteria at all of its monitoring sites. The EPA understands that the SC DHEC is still working to resolve siting criteria issues identified by their own assessments and in recent EPA audits and appreciates the SC DHEC's continued progress in resolving these issues.

Appendix F: Memorandum of Agreements and Waivers

DHEC MOA#: 2017-429

MEMORANDUM OF AGREEMENT

ON AIR QUALITY MONITORING FOR CRITERIA POLLUTANTS FOR

THE AUGUSTA - RICHMOND COUNTY

METROPOLITAN STATISTICAL AREA (MSA)

January 2017

Participating Agencies:

Georgia
Georgia Department of Natural Resources
Environmental Protection Division
Air Protection Branch (GA EPD)

South Carolina
Department of Health and Environmental Control (SCDHEC)
Bureau of Air Quality

I. PURPOSE/OBJECTIVES/GOALS

The purpose of this Memorandum of Agreement (MOA) is to renew the Augusta - Richmond County Metropolitan Statistical Area (MSA) Criteria Pollutant Air Quality Monitoring Agreement between SCDHEC and GA EPD (collectively referred to as the "affected agencies") to collectively meet United States Environmental Protection Agency (EPA) minimum monitoring requirements for particles of an aerodynamic diameter of 10 micrometers and less (PM10), particles of an aerodynamic diameter of 2.5 micrometers and less (PM2.5), and ozone; as well as any other criteria pollutant air quality monitoring deemed necessary to meet the needs of the MSA as determined reasonable by all parties. This MOA will establish the terms and conditions of this collective agreement to provide adequate criteria pollutant monitoring for the Augusta - Richmond County MSA as required by 40 CFR 58 Appendix D, Section 2(e).

II. BACKGROUND

The Augusta - Richmond County MSA consists of the following counties: Burke, Columbia, McDuffie, Lincoln, Richmond, Aiken and Edgefield. GA EPD has jurisdiction over Burke, Columbia, McDuffie, Lincoln, and Richmond Counties in Georgia and SCDHEC has jurisdiction over Aiken and Edgefield Counties, South Carolina. The SCDHEC and GA EPD are required by the Clean Air Act to measure for certain criteria pollutants in the ambient air in the Augusta - Richmond County Metropolitan Statistical Area (MSA). The EPA has established minimum monitoring requirements based on the size of the MSA and the quality of the air in the MSA for PM10, PM2.5, and ozone.

40 CFR 58 Appendix D, Section 2(e) states (in part):

> "...The EPA recognizes that there may be situations where the EPA Regional Administrator and the affected State or local agencies may need to augment or to divide the overall MSA/CSA monitoring responsibilities and requirements among these various agencies to achieve an effective network design. Full monitoring requirements apply separately to each affected State or local agency in the absence of an agreement between the affected agencies and the EPA Regional Administrator."

Currently each air pollution control agency (affected agency) conducts monitoring in its respective jurisdiction and coordinates its monitoring with the other air pollution control agency within the MSA.

III. ROLES AND RESPONSIBILITIES

The parties agree to the following terms and conditions:

- SCDHEC, and GA EPD (the "affected agencies") commit to conducting appropriate monitoring in their respective jurisdictions of the MSA; as needed, to collectively meet EPA minimum monitoring requirements for the entire MSA for PM10, PM2.5, and ozone, as well as any other criteria air pollutant monitoring deemed necessary to meet the needs of the MSA as determined reasonable by all affected agencies. The minimum air quality monitoring requirements (for PM10, PM2.5, and ozone described in 40 CFR 58) for the MSA shall apply to the MSA in its entirety and shall not apply to any sole affected agency within the MSA unless agreed upon by all affected agencies.

- The affected agencies commit to coordinating monitoring "responsibilities and requirements...to achieve an effective network design" regarding criteria air pollutant monitoring conducted in the MSA and commit to communicate unexpected or unplanned changes in monitoring activities within their jurisdictions to the other affected agency. As conditions warrant, the affected agencies may conduct telephone conference calls, meetings, or other

communications to discuss monitoring activities for the MSA. Each affected agency shall inform the other affected agency via telephone or e-mail of any monitoring changes occurring in its jurisdiction of the MSA at its earliest convenience after learning of the need for the change or making the changes. Such unforeseen changes may include evictions from monitoring sites, destruction of monitoring sites due to natural disasters, or similar occurrences that result in an extended (greater than 1 quarter) or permanent change in the monitoring network. At least once a year in the second quarter of the year or before June 15th, each affected agency shall make available to the other affected agency, a copy of its proposed monitoring plan for its jurisdiction within the MSA for the next year.

- Each party reserves the right to revoke or terminate this MOA at any time and for any reason by giving thirty (30) days written notice prior to the date of termination.

IV. LIMITATIONS

A. All commitments made in this MOA are subject to the availability of appropriated funds and each party's budget priorities. Nothing in this MOA, in and of itself, obligates SCDHEC or GA EPD to expend appropriations or to enter into any contract, assistance agreement, interagency agreement or other financial obligation.

B. This MOA is neither a fiscal nor a funds obligation document. Any endeavor involving reimbursement or contribution of funds between parties to this MOA will be handled in accordance with applicable laws, regulations, and procedures, and will be subject to separate subsidiary agreements that will be effected in writing by representatives of the parties.

C. Except as provided in Section III, this MOA does not create any right or benefit, substantive or procedural, enforceable by law or equity against SCDHEC or GA EPD, their officers or employees, or any other person. This MOA does not direct or apply to any person outside SCDHEC or GA EPD.

V. PROPRIETARY INFORMATION AND INTELLECTUAL PROPERTY

No proprietary information or intellectual property is anticipated to arise out of this MOA.

VI. POINTS OF CONTACT

The following individuals are designated points of contact for the MOA:

GA EPD: DeAnna Oser
GA EPD Ambient Monitoring Program
4244 International Parkway, Suite 120
Atlanta, GA 30354

DeAnna.Oser@dnr.ga.gov
Voice: (404) 363-7004
FAX: (404) 363-7100

SCDHEC: Micheal Mattocks
SCDHEC Bureau of Environmental Services
8231 Parklane Road
Columbia, SC 29223

mattocm@dhec.sc.gov
Voice: (803) 896-0902
FAX: (803) 896-0980

In the event that a point of contact needs to be changed, notification may be made via email to the other parties.

VII. MODIFICATION/DURATION/TERMINATION

This MOA will be effective when signed by all parties. This MOA may be amended at any time by the mutual written consent of the parties. The parties will review this MOA at least once every 10 years to determine whether it should be revised, renewed, or cancelled. This MOA may be revoked or terminated by an affected agency at any time and for any reason by giving thirty (30) days written notice prior to the date of termination.

VIII. REFERENCE

United States Environmental Protection Agency, Title 40 Code of Federal Regulations, Part 58, Appendix D, "Network Design Criteria for Ambient Air Quality Monitoring", Section 2 (e), "General Monitoring Requirements."

IX. APPROVALS

Georgia Department of Natural Resources, Environmental Protection Division (GA EPD)

BY: _____

TITLE: Director

DATE: 2/21/17

South Carolina Department of Health and Environmental Control (SCDHEC) Bureau of Air Quality

BY: _____

TITLE: Bureau Chief

DATE: 03/01/17

THIS AGREEMENT IS NOT OFFICIAL AND BINDING UNTIL SIGNED BY THE DHEC CONTRACTS MANAGER.

_____

Francine Miller
DHEC Contracts Manager
DATE: 3-6-17

MEMORANDUM OF AGREEMENT

ON AIR QUALITY MONITORING FOR CRITERIA POLLUTANTS FOR

THE CHARLOTTE-CONCORD-GASTONIA

METROPOLITAN STATISTICAL AREA (MSA)

July 1, 2016

Participating Agencies:

North Carolina
Department of Environmental Quality (NCDEQ)
Division of Air Quality (NCDAQ)

South Carolina
Department of Health and Environmental Control (SCDHEC)
Bureau of Air Quality

Mecklenburg County, North Carolina
Land Use and Environmental Services Agency
Air Quality (MCAQ)

I. PURPOSE/OBJECTIVES/GOALS

The purpose of this Memorandum of Agreement (MOA) is to establish the Charlotte-Concord-Gastonia Metropolitan Statistical Area (MSA) Criteria Pollutant Air Quality Monitoring Agreement among NCDAQ, SCDHEC, and the MCAQ (collectively referred to as the "affected agencies") to collectively meet United States Environmental Protection Agency (EPA) minimum monitoring requirements for criteria pollutants deemed necessary to meet the needs of the MSA as determined reasonable by all parties. This MOA will renew the terms and conditions of this collective agreement to provide adequate criteria pollutant monitoring for the Charlotte-Concord-Gastonia MSA as required by 40 CFR 58 Appendix D, Section 2(e).

II. BACKGROUND

The Charlotte-Concord-Gastonia MSA consists of

Cabarrus County, NC
Gaston County, NC
Iredell County, NC
Lincoln County, NC
Mecklenburg County, NC
Rowan County, NC
Union County, NC
Chester County, SC
Lancaster County, SC

York County, SC

NCDAQ has jurisdiction over Cabarrus, Gaston, Iredell, Lincoln, Rowan, and Union Counties; SCDHEC has jurisdiction over Chester, Lancaster, and York Counties; MCAQ has jurisdiction over Mecklenburg County.

The NCDAQ, SCDHEC, and MCAQ are required by the Clean Air Act to measure for certain criteria pollutants in the ambient air in the Charlotte-Concord-Gastonia MSA. The EPA has established minimum monitoring requirements based on the size of the MSA and the quality of the air in the MSA.

40 CFR 58 Appendix D, Section 2 (e) states (in part):

> "... The EPA recognizes that State or local agencies must consider MSA/CSA boundaries and their own political boundaries and geographical characteristics in designing their air monitoring networks. The EPA recognizes that there may be situations where the EPA Regional Administrator and the affected State or local agencies may need to augment or to divide the overall MSA/CSA monitoring responsibilities and requirements among these various agencies to achieve an effective network design. Full monitoring requirements apply separately to each affected State or local agency in the absence of an agreement between the affected agencies and the EPA Regional Administrator."

Currently each air pollution control agency (affected agency) conducts monitoring in its respective jurisdiction and coordinates monitoring with the other air pollution control agencies within the MSA.

III. ROLES AND RESPONSIBILITIES

The parties agree to the following terms and conditions:

- NCDAQ, SCDHEC, and MCAQ (the "affected agencies") commit to conducting appropriate monitoring in their respective jurisdictions of the MSA; as needed, to collectively meet EPA minimum monitoring requirements for the entire MSA for criteria air pollutant monitoring deemed necessary to meet the needs of the MSA as determined reasonable by all affected agencies. The minimum air quality monitoring requirements for the MSA shall apply to the MSA in its entirety and shall not apply to any sole affected agency within the MSA unless agreed upon by all affected agencies.

- The affected agencies commit to coordinating monitoring responsibilities and requirements to achieve an effective network design regarding criteria air pollutant monitoring conducted in the MSA and commit to communicate unexpected or unplanned changes in monitoring activities within their jurisdictions to the other affected agencies. As conditions warrant, the affected agencies may conduct telephone conference calls, meetings, or other communications to discuss monitoring activities for the MSA. Each affected party shall inform the others via telephone or e-mail of any monitoring changes occurring in its jurisdiction of the MSA at its earliest convenience after learning of the need for the change or making the changes. Such unforeseen changes may include evictions from monitoring sites, destruction of monitoring sites due to

natural disaster, or similar occurrences that result in extended change (greater than one quarter) or permanent change in the monitoring network. At least once a year in the second quarter or before June 15th, each agency shall make available to the other agency a copy of its proposed monitoring plan for its jurisdiction with the MSA for the next year.

- Each party reserves the right to revoke or terminate this MOA at any time for any reason by giving thirty (30) days written notice prior to the date of termination.

IV. LIMITATIONS

A. All commitments made in this MOA are subject to the availability of funds and each party's budget priorities. Nothing in this MOA, in and of itself, obligates NCDAQ, SCDHEC, or MCAQ to expend funds or to enter into any contract, assistance agreement, interagency agreement, or other financial obligation.

B. This MOA is neither a fiscal nor a funds obligation document. Any endeavor involving reimbursement or contribution of funds between parties to this MOA will be handled in accordance with applicable laws, regulations, and procedures, and will be subject to separate subsidiary agreements what will be effected in writing by representatives of the parties.

C. Except as provided in Section III, this MOA does not create any right or benefit, substantive or procedural, enforceable by law or equity against NCDAQ, SCDHEC, or MCAQ, their officers or employees, or any other person. This MOA does not direct or apply to any person outside NCDAQ, SCDHEC, or MCAQ.

V. PROPRIETARY INFORMATION AND INTELLUCTUAL PROPERTY

No proprietary information or intellectual property is anticipated to arise out of this MOA.

VI. POINTS OF CONTACT

The following individuals are designated points of contact for the MOA:

NCDEQ DAQ:
Joette Steger
NC DENR Division of Air Quality
1641 Mail Service Center
Raleigh, NC 27699-1641

joette.steger@ncdenr.gov
Voice/fax: 919-707-8449

SCDHEC:
Scott Reynolds
SCDHEC Bureau of Environmental Health Services
2600 Bull Street
Columbia, SC 29201

reynolds@dhec.sc.gov
Voice: 803-896-0902

MCAQ: Jeff Francis
Mecklenburg County Land Use and Environmental Services Agency – Air Quality
2145 Suttle Avenue
Charlotte, NC 28208-5237

Jeff.Francis@mecklenburgcountync.gov
Phone 704-336-5430
Fax 704-336-4391

In the event that a point of contact needs to be changed, notification may be made via email to the other parties.

VII. MODIFICATION/DURATION/TERMINATION

This MOA will be effective when signed by all parties. This MOA may be amended at any time by the mutual written consent of all parties. The parties will review this MOA at least once every 10 years to determine whether it should be revised, renewed, or cancelled. This MOA may be revoked or terminated by an affected party at any time and for any reason by giving thirty (30) days written notice prior to the date of termination.

VIII. REFERENCE

United States Environmental Protection Agency, Title 40 Code of Federal Regulations, Part 58, Appendix D, "Network Design Criteria for Ambient Air Quality Monitoring", Section 2 (e), "General Monitoring Requirements"

IX. APPROVALS

North Carolina Department of Environmental Quality
Division of Air Quality (NCDAQ)

BY: Sheila C. Holman

TITLE: Director, Division of Air Quality

DATE: 6/27/2016

South Carolina Department of Health and Environmental Control (SCDHEC)
Bureau of Air Quality

BY: [signature]

TITLE: Chief, Bureau of Air Quality

DATE: 07/05/2016

Mecklenburg County Land Use and Environmental Services Agency – Air Quality (MCAQ)
Mecklenburg County Air Quality

BY: Robin H Rhoden

TITLE: Director, Air Quality

DATE: 6/29/2016

D H E C
PROMOTE PROTECT PROSPER
Catherine E. Heigel, Director
Promoting and protecting the health of the public and the environment

MEMORANDUM

July 5, 2016

Subject: Change of Point of Contact for South Carolina

Memorandum of Agreement on Air Quality Monitoring for Criteria Pollutants for the Charlotte-Concord-Gastonia Metropolitan Statistical Area (MSA)

From: Rhonda B. Thompson, SC DHEC
Chief, Bureau of Air Quality

As of July 5, 2016, the Point of Contact for South Carolina will be Micheal Mattocks, instead of Scott Reynolds.

Micheal's contact information is below:

Micheal Mattocks
SC DHEC – Bureau of Environmental Health Services
2600 Bull Street
Columbia, SC 29201
(803)896-0856
mattock@dhec.sc.gov

MEMORANDUM OF AGREEMENT

ON AIR QUALITY MONITORING FOR CRITERIA POLLUTANTS FOR

THE MYRTLE BEACH-CONWAY-NORTH MYRTLE BEACH

METROPOLITAN STATISTICAL AREA (MSA)

July 1, 2015

Participating Agencies:

North Carolina
Department of Environment and Natural Resources (NCDENR)
Division of Air Quality (NCDAQ)

South Carolina
Department of Health and Environmental Control (SCDHEC)
Bureau of Air Quality

I. PURPOSE/OBJECTIVES/GOALS

The purpose of this Memorandum of Agreement (MOA) is to establish the Myrtle Beach-Conway-North Myrtle Beach Metropolitan Statistical Area (MSA) Criteria Pollutant Air Quality Monitoring Agreement between NCDAQ and SCDHEC (collectively referred to as the "affected agencies") to collectively meet United States Environmental Protection Agency (EPA) minimum monitoring requirements for ozone, as well as other criteria pollutants air quality monitoring deemed necessary to meet the needs of the MSA as determined reasonable by all parties. This MOA will establish the terms and conditions of this collective agreement to provide adequate criteria pollutant monitoring for the Myrtle Beach-Conway-North Myrtle Beach MSA as required by 40 CFR 58 Appendix D, Section 2(e).

II. BACKGROUND

The Myrtle Beach-Conway-North Myrtle Beach MSA consists of Horry County and Brunswick County. NCDAQ has jurisdiction over Brunswick County and SCDHEC has jurisdiction over Horry County. Brunswick County was previously included in the Wilmington (NC) MSA with New Hanover and Pender Counties. However, the United States Office of Management and Budget revised the geographic delineation in February 2013 to include Brunswick County in the Myrtle Beach-Conway-North Myrtle Beach MSA instead.

The NCDAQ and SCDHEC are required by the Clean Air Act to measure for certain criteria pollutants in the ambient air in the Myrtle Beach-Conway-North Myrtle Beach MSA. The EPA has established minimum monitoring requirements based on the size of the MSA and the quality of the air in the MSA for ozone.

40 CFR 58 Appendix D, Section 2 (e) states (in part):

> "... The EPA recognizes that State or local agencies must consider MSA/CSA boundaries and their own political boundaries and geographical characteristics in designing their air monitoring networks. The EPA recognizes that there may be situations where the EPA Regional Administrator and the affected State or local agencies may need to augment or to

divide the overall MSA/CSA monitoring responsibilities and requirements among these various agencies to achieve an effective network design. Full monitoring requirements apply separately to each affected State or local agency in the absence of an agreement between the affected agencies and the EPA Regional Administrator."

Currently each air pollution control agency (affected agency) conducts monitoring in its respective jurisdiction and coordinates monitoring with the other air pollution control agencies with the MSA.

III. ROLES AND RESPONSIBILITIES

The parties agree to the following terms and conditions:

- NCDAQ and SCDHEC (the "affected agencies") commit to conducting appropriate monitoring in their respective jurisdictions of the MSA; as needed, to collectively meet EPA minimum monitoring requirements for the entire MSA for ozone, as well as other criteria air pollutant monitoring deemed necessary to meet the needs of the MSA as determined reasonable by both affected agencies. The minimum air quality monitoring requirements for the MSA shall apply to the MSA in its entirety and shall not apply to any sole affected agency within the MSA unless agreed upon by all affected agencies.

- The affected agencies commit to coordinating monitoring responsibilities and requirements to achieve an effective network design regarding criteria air pollutant monitoring conducted in the MSA and commit to communicate unexpected or unplanned changes in monitoring activities within their jurisdictions to the other affected agency. As conditions warrant, the affected agencies may conduct telephone conference calls, meetings, or other communications to discuss monitoring activities for the MSA. Each affected party shall inform the other via telephone or e-mail of any monitoring changes occurring in its jurisdiction of the MSA at its earliest convenience after learning of the need for the change or making the changes. Such unforeseen changes may include evictions from monitoring sites, destruction of monitoring sites due to natural disaster, or similar occurrences that result in extend (greater than one quarter) or permanent change in the monitoring network. At least once a year in the second quarter or before June 15th, each agency shall deliver to the other agency a copy of its proposed monitoring plan for its jurisdiction with the MSA for the next year.

- Each party reserves the right to revoke or terminate this MOA at any time for any reason by giving thirty (30) days written notice prior to the date of termination.

IV. LIMITATIONS

A. All commitments made in this MOA are subject to the availability of funds and each party's budget priorities. Nothing in this MOA, in and of itself, obligates NCDAQ or SCDHEC to expend funds or to enter into any contract, assistance agreement, interagency agreement, or other financial obligation.

B. This MOA is neither a fiscal nor a funds obligation document. Any endeavor involving reimbursement or contribution of funds between parties to this MOA will be handled in accordance

with applicable laws, regulations, and procedures, and will be subject to separate subsidiary agreements what will be effected in writing by representatives of the parties.

C. Except as provided in Section III, this MOA does not create any right or benefit, substantive or procedural, enforceable by law or equity against NCDAQ or SCDHEC, their officers or employees, or any other person. This MOA does not direct or apply to any person outside NCDAQ or SCDHEC.

V. PROPRIETARY INFORMATION AND INTELLUCTUAL PROPERTY

No proprietary information or intellectual property is anticipated to arise out of this MOA.

VI. POINTS OF CONTACT

The following individuals are designated points of contact for the MOA:

NC DENR DAQ: Donnie Redmond
NC DENR Division of Air Quality
1641 Mail Service Center
Raleigh, NC 27699-1641

donnie.redmond@ncdenr.gov
Voice/fax: 919-707-8468

SCDHEC: Scott Reynolds
SCDHEC Bureau of Air Quality
2600 Bull Street
Columbia, SC 29201

reynolds@dhec.sc.gov
Voice: 803-896-0902

VII. MODIFICATION/DURATION/TERMINATION

This MOA will be effective when signed by all parties. This MOA may be amended at any time by the mutual written consent of all parties. The parties will review this MOA at least once every 10 years to determine whether it should be revised, renewed, or cancelled. This MOA may be revoked or terminated by an affected party at any time and for any reason by giving thirty (30) days written notice prior to the date of termination.

VIII. REFERENCE

United States Environmental Protection Agency, Title 40 Code of Federal Regulations, Part 58, Appendix D, "Network Design Criteria for Ambient Air Quality Monitoring", Section 2 (e), "General Monitoring Requirements"

IX. APPROVALS

North Carolina Department of Environment and Natural Resources
Division of Air Quality (NCDAQ)

BY: Sheila C. Holman

TITLE: Director, Division of Air Quality

DATE: 6/12/2015

South Carolina Department of Health and Environmental Control (SCDHEC)
Bureau of Air Quality

BY: Myra A Reece

TITLE: Bureau Chief, Air Quality Bureau

DATE: 6/22/15

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

April 1, 2020

Rhonda B. Thompson
Chief
Bureau of Air Quality
South Carolina Department of Health
and Environmental Control
2600 Bull Street
Columbia, South Carolina 29201

Dear Ms. Thompson:

On February 12, 2020, the South Carolina Department of Health and Environmental Control (DHEC) submitted to the U.S. Environmental Protection Agency a modification to the state of South Carolina's 2019 Annual Ambient Air Monitoring Network Plan (Network Plan Addendum). The Network Plan Addendum requests approval for a 40 CFR Part 58, Appendix E monitor siting waiver to be granted for the JCI Woods lead (Pb) monitoring site (AQS ID: 45-041-8003). The monitoring regulations found in 40 CFR Part 58.10(a)(1) require that the monitoring network plan and modification be made available for public comment for at least 30 days before submission to the EPA for approval. The Network Plan Addendum was published in the State Register for public comment from October 25, 2019 to November 25, 2019, during which no comments were received.

The Network Plan Addendum requests a waiver of siting requirements for the JCI Woods Pb monitoring site. Four trees to the north and east of the site are identified as not meeting the spacing from obstructions requirement as defined in 40 CFR Part 58, Appendix E, Section 4(a):

> "The distance from the obstacle to the probe, inlet, or monitoring path must be at least twice the height that the obstacle protrudes above the probe, inlet, or monitoring path."

The width and locations of the trees around the sampler are also such that the monitor siting does not meet the footnote to Table E-4 of 40 CFR Part 58, Appendix E, Section 11, requiring that the site "must have unrestricted airflow 270 degrees around the probe or sampler..."

Forty (40) CFR Part 58, Appendix E, Section 10 states that waivers of siting criteria for existing sites can be granted if either of the following criteria are met:

> "10.1.1 – The site can be demonstrated to be as representative of the monitoring area as it would be if the siting criteria were being met.
>
> 10.1.2 – The monitor or probe cannot be reasonably located so as to meet the siting criteria because of physical constraints"

The EPA believes that this situation meets the waiver requirements of Section 10.1.1. As the location of the JCI Woods site is located for source-oriented monitoring, and the identified trees do not obscure the path of highest concentration from the source, the site's location is still representative of the ambient Pb concentrations around the JCI facility. The EPA therefore waives the requirements of 40 CFR Part 58, Appendix E, Section 4(a) and the footnote to Table E-4 in 40 CFR Part 58, Appendix E, Section 11, regarding the four trees to the north and east of the JCI Woods site. This site must still meet all other siting requirements found in Appendix E of 40 CFR Part 58. This waiver should be re-evaluated in the 2025 South Carolina network assessment due to the EPA by July 1, 2025.

The waiver of the specific siting requirements discussed above for JCI Woods is effective on the date of this letter. The DHEC should consult the EPA Region 4 Laboratory Services and Applied Science Division (LSASD) staff on whether quality assurance flags should be added to the data in the Air Quality System (AQS) to indicate that there were siting criteria issues at the site prior to and after the EPA approval of this siting criteria waiver. The data with QA flags for siting criteria issues would still be comparable to the Lead National Ambient Air Quality Standard.

Thank you for your collaboration with the EPA to monitor air and promote clean air in South Carolina. If you have any questions about this approval, please contact Adam Friedman at 404-562-9033.

Sincerely,

KENNETH MITCHELL
Digitally signed by KENNETH MITCHELL
Date: 2020.04.01 16:01:18 -04'00'

Kenneth L. Mitchell, Ph.D.
Acting Director
Air and Radiation Division

cc: Renee Shealy, Bureau Chief, BEHS
Connie Turner, Director, DAQA, BEHS
Robert J. Brown Jr., BAQ
Mary Peyton Wall, BAQ
G. Renee Madden, BAQ
Laura Ackerman, Region 4 LSASD

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

MAY 26 2016

Ms. Rhonda Banks Thompson
Chief
Bureau of Air Quality Control
South Carolina Department of Health and
Environmental Control
2600 Bull Street
Columbia, South Carolina 29201

Dear Ms. Thompson:

On March 16, 2016, the South Carolina Department of Health and Environmental Control (SC DHEC) notified the U.S. Environmental Protection Agency Region 4 that the comment period had ended for the Network Plan Addendum to the state of South Carolina's 2015 annual ambient air monitoring network plan (Network Plan Addendum). The Network Plan Addendum provided further information and proposed changes to the 2015 annual ambient air monitoring network plan (Network Plan), which was approved with three exceptions by the EPA on November 19, 2015. The Network Plan Addendum was received as two separate documents. One document proposed changes to the SC DHEC monitoring network and the other document requested waivers for monitoring siting requirements.

The EPA understands that the SC DHEC provided the public a 30-day review period for its draft Network Plan Addendum and that no comments were received.

The Network Plan Addendum proposes a number of changes to the SC DHEC's ambient air monitoring network, including:

- shutdown of four ozone (O_3) monitoring sites,
- relocation of one O_3 monitoring site,
- startup of one O_3 monitoring site,
- shutdown of one multipollutant ($PM_{2.5}$ and PM_{10}) site,
- a waiver of siting requirements at an O_3 and SO_2 site, and
- renewal of an existing waiver at a multi-pollutant site.

The EPA approves the requests in the Network Plan Addendum, with the following exceptions:

- The EPA is deferring making a decision on the proposed shut down of the Clemson O_3 site (AQS ID 45-072-0002) in order to allow more time for consideration and discussion with the SC DHEC.
- The EPA does not approve the discontinuation of O_3 monitoring at the Bushy Park Pump Station site (AQS ID 45-015-0002), since this site is required for the Charleston area to meet the O_3 minimum monitoring requirements found in 40 CFR Part 58, Appendix D. The EPA understands that the SC DHEC is currently looking for nearby property to move this monitor to. Once a suitable replacement site is found, the SC DHEC should request a relocation of the Bushy Park Pump Station O_3 monitor.

- The EPA conditionally approves the establishment of the Coastal Carolina O_3 monitoring site, once the SC DHEC has resolved any monitor siting issues. This site will meet the requirements for O_3 monitoring in the Myrtle Beach-Conway-North Myrtle Beach, SC-NC Metropolitan Statistical Area. The SC DHEC should include in the next ambient air monitoring network plan evidence that the Coastal Carolina site meets air monitoring siting requirements found in 40 CFR Part 58, Appendix E.
- The EPA supports the proposed relocation for the York CMS O_3 monitoring site (AQS ID 45-091-0006) to the proposed York O_3 site (AQS ID 45-091-0007). However, the Network Plan Addendum does not provide sufficient information to approve the new location at the proposed York O_3 site. In addition to the information provided in the Network Plan Addendum, the SC DHEC should submit to the EPA information to demonstrate that monitoring siting criteria are met, including: zoomed in aerial photo or a site location map; site photo(s) facing from the site in each direction (N, S, E, W); applicable measurements to any obstructions, trees or roadways; and the proposed probe height for the site.

All of the approved ambient air monitoring network changes, requested in the Network Plan Addendum should also be documented in the next annual ambient air monitoring network plan, due July 1, 2016.

Details regarding the EPA's review of the Network Plan Addendum are provided in the enclosed comments.

Thank you for working with us to monitor air pollution and promote healthy air quality in South Carolina. If you have any questions or concerns, please contact Gregg Worley at (404) 562-9141 or Ryan Brown at (404) 562-9147.

Sincerely,

Carol L. Kemker
Acting Director
Air, Pesticides and Toxics Management Division

Enclosure

cc: Mr. Robert Brown
Division Director, Air Planning Development SC DHEC

Mr. Scott Reynolds
Director, Division of Air Quality Analysis, SC DHEC

The Honorable William Harris
Chief of the Catawba Indian Nation

Mr. Darin Steen
Director, Environmental Services, Catawba Indian Nation

Ms. Sheila Holman, Director, Division of Air Quality, NCDEQ

2015 State of South Carolina Ambient Air Monitoring Network Plan Addendum
The U. S. EPA Region 4 Comments and Recommendations

This document contains the U.S. Environmental Protection Agency Region 4 comments and recommendations on the state of South Carolina's 2015 ambient air monitoring network plan addendum (Network Plan Addendum). Ambient air monitoring rules, which include regulatory requirements that address network plans, data certification, and minimum monitoring requirements, among other requirements, are found in 40 CFR Part 58.

Proposed Monitoring Discontinuations

The Network Plan Addendum proposes to discontinue five monitoring sites. The EPA is deferring the decision for the proposed shut down of the Clemson O_3 site (AQS ID 45-072-0002), in order to allow more time for consideration and discussion with the SC DHEC on this issue. The EPA acknowledges the discontinuation of O_3 monitoring at the Cowpens (AQS ID 45-021-0002) site, and approves the discontinuation of O_3 monitoring at the Famoda Farms (AQS ID 45-045-1003) site, as well as the discontinuation of $PM_{2.5}$ and PM_{10} monitoring at the Bates House site (AQS ID 45-079-0019). See Table 1 for a summary of these requests with the EPA's comments.

The O_3 minimum monitoring requirements are found in 40 CFR Part 58, Appendix D, Table D-2. These minimum requirements are based on metropolitan statistical area (MSA) boundaries as defined by the U.S. Office of Management and Budget, population estimates from the U.S. Census Bureau for these MSAs, and historical ambient air monitoring data.

Table 1: Monitors Proposed for Discontinuation

AQS ID	Site Name	MSA	Pollutant	Type	Comments
45-072-0002	Clemson	Greenville-Anderson-Mauldin, SC	O_3	SLAMS	Deferred for further discussion with the SC DHEC.
45-021-0002	Cowpens National Battlefield	Gaffney, SC	O_3	SPM	Approval not required for SPM - shutdown acknowledged.[1]
45-015-0002	Bushy Park Pump Station	Charleston-North Charleston-Summerville, SC	O_3	SLAMS	Not Approved. A suitable replacement site should be found in the MSA.
45-045-1003	Famoda Farms	Greenville-Anderson-Mauldin, SC	O_3	SLAMS	Approved
45-079-0019	Bates House	Columbia, SC	$PM_{2.5}$, PM_{10}	SLAMS	Approved. The SC DHEC will lose site access. Collocated $PM_{2.5}$ sampler will be moved to Parklane site (AQS ID 45-079-0007) to meet $PM_{2.5}$ collocation requirements.

[1] The Cowpens National Battlefield O_3 site is in a MSA that meets minimum O_3 monitoring requirements and is classified as a special purpose monitor (SPM). The SC DHEC does not require EPA approval to shut down this monitor since it is a SPM. The EPA acknowledges the discontinuation of this monitor and that the monitoring requirements for O_3 in Appendix D to 40 CFR Part 58 will continue to be met after this monitor is shutdown.

The SC DHEC requested to discontinue O_3 monitoring at the Famoda Farms monitoring site (AQS ID 45-045-1003). The EPA approves the shutdown of this site. The Famoda Farms monitor is one of four O_3 monitors operating in the Greenville-Anderson-Mauldin, SC MSA. This area is required at a minimum to have two O_3 monitors. Additionally, Famoda Farms has consistently recorded lower O_3 concentrations than the Clemson and Hillcrest Middle School monitoring sites, which are also in the Greenville area. The monitoring requirements in Appendix D to 40 CFR Part 58 will continue to be met in the Greenville area after the Famoda Farms monitor is shutdown.

At this time, the EPA does not approve the shutdown of the O_3 monitor at Bushy Park Pump Station. The Charleston MSA would not meet minimum O_3 monitoring requirements if O_3 monitoring at this site were discontinued. At a minimum, the Charleston MSA is required to have two regulatory O_3 monitors and would only have one regulatory O_3 monitor if monitoring at Bushy Park Pump Station were discontinued. The EPA recommends that the SC DHEC find a suitable replacement monitoring location for Bushy Park. In the meantime, the SC DHEC should continue to flag in the Air Quality System (AQS) the Bushy Park Pump Station O_3 data as not meeting siting requirements.

The SC DHEC expects to lose access to the property where the Bates House $PM_{2.5}$ and PM_{10} monitoring site (AQS ID 45-079-0019) is located. For $PM_{2.5}$, the Bates House monitoring has recorded daily and annual $PM_{2.5}$ design values below the national ambient air quality standards (NAAQS) for the last five years. Additionally, $PM_{2.5}$ concentrations recorded at the Irmo site (AQS ID 45-063-0008), which is also in the Columbia, SC MSA, have been typically higher than Bates House. Over the last five years, Irmo has had annual design values higher than Bates House, as well. The PM_{10} levels recorded at Bates House have been well below the applicable standard for more than ten years. The EPA understands that the SC DHEC will move the collocated $PM_{2.5}$ sampler from Bates House to the Parklane site (AQS ID 45-079-0007) to still meet the $PM_{2.5}$ collocation requirements. After the Bates House monitoring site is shutdown and the $PM_{2.5}$ collocation requirements are met by establishing a collocated $PM_{2.5}$ sampler at the Parklane site, the Columbia, SC MSA will still meet monitoring requirements in Appendix D to 40 CFR Part 58 for PM_{10} and $PM_{2.5}$. Thus, EPA approves the discontinuation of monitoring at Bates House.

Proposed Monitor Startups or Relocations

The Network Plan Addendum also proposes to relocate one O_3 monitor and startup one O_3 monitor. See Table 2 for a summary of these requests.

Table 2: Monitors Proposed for Startup or Relocation

AQS ID	Site Name	MSA	Pollutant	Type	Comments
45-091-0006	York	Charlotte-Gastonia-Concord NC-SC	O_3	SLAMS	The EPA supports this relocation to the new site, but requests additional information in the next network plan.
45-051-0008	Coastal Carolina	Myrtle Beach-Conway-North Myrtle Beach, SC-NC	O_3	SLAMS	EPA Conditionally approves site startup. The Myrtle Beach MSA will the meet minimum monitoring requirements once this site is established. Site must meet siting criteria.

In its response to the 2015, Network Plan EPA approved a temporary shutdown of the York CMS monitoring site (AQS ID 45-091-0006). The SC DHEC stated in the Network Plan that it expects to lose access to the site and was looking for a replacement location. The Network Plan Addendum proposes to restart O_3 monitoring at a new site, York (AQS ID 45-091-0007), which is 3.5 miles northeast of the York CMS site. The EPA understands that the York CMS site is currently still operational even though the temporary shutdown was approved, and that The SC DHEC hopes to operate O_3 monitors concurrently at both the York CMS and York sites before discontinuing monitoring at York CMS. The York CMS monitor is an upwind location for the Charlotte-Concord-Gastonia NC-SC Core Based Statistical Area (CBSA) and typically reads lower than the other O_3 monitors in the CBSA. The EPA believes that the proposed York location would be representative of the same air shed as the previous York CMS monitoring site. The EPA supports the proposed location for the York O_3 monitoring site. However, the Network Plan Addendum does not provide sufficient information to fully approve the proposed York O_3 site. In addition to the information provided in the Network Plan Addendum, the SC DHEC should submit to the EPA information to demonstrate that monitoring siting criteria are met including: zoomed in aerial photo or a site location map; site photo(s) facing from the site in each direction (N, S, E, W); applicable measurements to any obstructions, trees or roadways; and the proposed probe height for the site. This information should be included in the next ambient air monitoring network plan.

The Network Plan Addendum proposes to establish a new O_3 monitoring site, Coastal Carolina (AQS ID 45-051-0008), in the Myrtle Beach-Conway-North Myrtle Beach, SC-NC CBSA to meet O_3 minimum monitoring requirements for this area. The SC DHEC provided 2011 Community Multiscale Air Quality (CMAQ) modeling output for this area in the Network Plan Addendum. The CMAQ model output indicates that the proposed Coastal Carolina site is in the area of the maximum predicted O_3 for the CBSA.

During the 2015 EPA technical systems audit (TSA), the EPA staff visited the proposed location for the Coastal Carolina site. The EPA noted that there was a tree dripline within ten meters of the expected monitoring probe location. This configuration would not meet the monitoring siting criteria found in 40 CFR Part 58, Appendix E, Section 5 siting requirements, "Spacing from Trees." The EPA conditionally approves the Coastal Carolina site; however, full approval is withheld until the monitoring siting criteria issue has been resolved. The SC DHEC should provide evidence that the Coastal Carolina site meets the monitoring siting criteria requirements found in Appendix E to 40 CFR Part 58 in the next ambient air monitoring network plan.

Proposed Waivers of Monitor Siting Criteria

The Network Plan Addendum requests one waiver of 40 CFR Part 58, Appendix E siting requirements and the extension of an existing waiver of siting requirements. Table 3 summarizes these requests.

Under 40 CFR Part 58, Appendix E, Section 10, waivers of siting criteria for existing sites can be granted if either of the following criteria are met:

> 10.1.1 The site can be demonstrated to be as representative of the monitoring area as it would be if the siting criteria were being met.

10.1.2 The monitor or probe cannot reasonably be located to meet the siting criteria because of physical constraints (e.g., inability to locate the required type of site the necessary distance from roadways or obstructions).

Table 3: Waivers of Siting Criteria

AQS ID	Site Name	MSA	Pollutant	Type	Comments
45-079-0021	Congaree Bluff	Columbia, SC	O_3, SO_2	SPM	Waiver of siting criteria approved for the identified trees obstructing the monitor. Waiver through 2020.
45-045-0015	Greenville ESC	Greenville-Anderson-Mauldin, SC	SO_2, NO_2, $PM_{2.5}$, PM_{10}, O_3	SLAMS	Existing waiver of siting requirements extended through 2018.

The Network Plan Addendum requests a waiver of monitoring siting requirements for the Congaree Bluff monitoring site (AQS ID 45-079-0021). The objective of the Congaree Bluff site is to measure O_3 and SO_2 within the Congaree National Park boundaries. Within the national park boundaries, this monitor cannot be reasonably located to meet the siting criteria because of physical constraints. The EPA staff visited the Congaree Bluff site on January 25, 2016, and agree that this is the best monitoring location within the park boundaries. However, there are over forty trees surrounding the probe that do not meet the spacing from obstructions discussed in 40 CFR Part 58, Appendix E, Section 4 (a)"… The distance from the obstacle to the probe, inlet, or monitoring path must be at least twice the height that the obstacle protrudes above the probe, inlet, or monitoring path…"

The configuration of obstructing trees is such that the monitor probe siting does not meet Table E-4 of 40 CFR Part 58, Appendix E, Section 11, which states that monitor location "must have unrestricted airflow 270 degrees around the probe or sampler." The Congaree Bluff monitors have 180 degrees of unobstructed airflow due to the obstructing trees.

However, the EPA understands that the SC DHEC has trimmed the dripline of trees so that all tree driplines are no closer than ten meters from the monitoring probes, in order to comply with 40 CFR Part 58, Appendix E, Section 5 siting requirements, "Spacing from Trees." The SC DHEC has taken reasonable steps to meet many of the siting monitoring requirements, and the EPA believes that removing over 40 trees from a national park to meet all of the siting requirements is not necessary.

The EPA waives the requirements of 40 CFR Part 58, Appendix E, Section 4 (a) and Table E-4 to 40 CFR Part 58, Appendix E, Section 11 in regards to the trees identified by The SC DHEC in the Network Plan Addendum for the Congaree Bluff site. This site must still meet all other siting requirements found in Appendix E to 40 CFR Part 58. The EPA waives these specific requirements for a period of five years. This waiver should be re-evaluated in the 2020 South Carolina network assessment.

Similarly, the Network Plan Addendum requests to renew a waiver of siting criteria for the Greenville ESC monitoring site (AQS ID 45-045-0015). In 2009, the EPA granted a waiver of siting requirements for this site based on concurrent monitoring with the previous site. The Network Plan Addendum identifies two trees that are closer than twice the distance between the top of the tree and the height of the monitoring probe. At this time, the tree configuration and spacing at the site is close to meeting siting criteria such that the EPA believes that the monitoring data is representative of data if the siting criteria were met. Also, restrictions at the location prevent a reconfiguration of equipment or removal of trees.

The EPA waives the requirements of 40 CFR Part 58, Appendix E, Section 4 (a) and Section 11 (Table E-4) in regards to the trees identified by the SC DHEC in the Network Plan Addendum for the Greenville ESC site. The EPA waives these specific requirements for a period of two years. The EPA and the SC DHEC will continue to reevaluate the waiver of these requirements and alternative solutions in upcoming ambient air monitoring network plans. The Greenville ESC site must still meet all of the other siting requirements found in Appendix E to 40 CFR Part 58.

Appendix G: Summary of Public Comments Received

Below is a summary of the comments received and the Department's response. A copy of the actual comments (emails and mail) received will be submitted to the EPA Region 4 staff, along with the final 2020-2021 Monitoring Plan.

Comment: EPA Region 4 stated that the MOA's and Waivers in Appendix D and Appendix E were not included in the Network Plan that was out for public comment.

Department response: The MOA's and Waivers were inadvertently left out when the document was being assembled. All of the MOA's and Waivers have been on public comment in the past and will be added to the final document.

Appendix H: Ongoing Data Requirements Rule for 2010 1-hour SO_2 NAAQS Verification Calendar Year 2019

On June 2, 2010, the U.S. EPA revised the primary NAAQS for sulfur dioxide (SO_2) by establishing a 1-hour standard at a level of 75 parts per billion. In 2017, The Department of Health and Environmental Control (Department) submitted SO_2 designation modeling for certain facilities in Berkeley, Richland and York counties to demonstrate these counties should be designated as attainment. These facilities included Santee Cooper Cross Generating Station, Resolute Industries (now New-Indy Catawba), International Paper – Eastover, and (SCE&G) Wateree Station.

In January 2018 EPA designated each county in South Carolina as attainment/unclassifiable for the 2010 SO_2 standard. Under 40 CFR 51.1205(b), for areas designated as attaining the standard based on modeling of actual emissions, the Department is required to submit an annual report that documents the annual SO_2 emissions of these sources, an assessment of any emissions increase from the prior year, and a recommendation whether further modeling is warranted.

Attached is the Department's annual report satisfying the ongoing data requirements for the affected area's designations. The annual report was provided for a 30-day public comment period, which began on April 24, 2020 and ended May 26, 2020. No comments were received.

International Paper - Eastover Mill (IP Eastover) and Wateree Station (Wateree), Richland County

IP Eastover and Wateree were modeled in the same modeling domain for the 1-hr SO_2 attainment modeling. Wateree has taken permit limits matching its modeled rates, and this revised permit was provided to the EPA by letter on May 11, 2017. IP Eastover modeled several units below the permitted emission rates. As shown in Tables 1-5 below, actual SO_2 emissions for all these sources are significantly less than the modeled rates and no further modeling is warranted.

Table 1

IP Eastover No. 1 Power Boiler and Recovery Boiler (Combined Stack)			
2018 SO_2 Emissions	2019 SO_2 Emissions	Modeled Emissions	Status
179.0 lbs/hr	173.5 lbs/hr	606.9 lbs/hr	No further action needed

Table 2

IP Eastover Recovery Furnace No. 2 and NCG Incinerator (Combined Stack)			
2018 SO_2 Emissions	2019 SO_2 Emissions	Modeled Emissions	Status
206.6 lbs/hr	216.5 lbs/hr	420.8 lbs/hr	No further action needed

Table 3

IP Eastover No. 2 Power Boiler			
2018 SO_2 Emissions	2019 SO_2 Emissions	Modeled Emissions	Status
105.9 lbs/hr	72.8 lbs/hr	971.0 lbs/hr	No further action needed

For IP Eastover, the source of sulfur dioxide (SO_2) pound per hour (lb/hr) emissions rates is actual total emissions per source per year over time period (year). An example calculation is shown below for the combined stack of No. 1 Recovery Furnace (381A) and No. 1 Power Boiler (501A):

$$Emission\ Rate\ \left(\frac{lb}{hr}\right) = \frac{Total\ SO_2\ tons\ emitted\ from\ 381A\ \&\ 501A}{Total\ time\ in\ Calendar\ Year, days} \times \frac{2000\ lb}{ton} \times \frac{day}{24\ hours}$$

Actual emissions (tons) are provided in the chart below for 2018 and 2019. The combined stack emissions have been included on the annual reports sent to SC DHEC. Explanations of changes in emissions/year, per 40 CFR 51.1205 (b), were documented in the March 4th, 2020, report to SC DHEC. The increase in stack emissions for the Recovery Furnace No. 9/NCG Incinerator (382A/331A) from 2018 to 2019 was due to burning more No. 5 fuel oil in 382A and more concentrated NCG burn hours in 331A (primary treatment device) compared to previous years.

		Actual Emissions by Source (Tons)		Combined Stack Emissions (Tons)	
Source	Abbr.	2018	2019	2018	2019
No. 1 Recovery Furnace	381A	11.96	9.33	784.1	760.0
No. 1 Power Boiler	501A	772.13	750.63		
No. 2 Recovery Furnace	382A	31.98	38.3	904.9	948.1
NCG Incinerator	331A	872.94	909.83		
No. 2 Power Boiler	502A	463.97	318.9	464.0	318.9
TOTAL		2152.98	2026.99		

Table 4

Wateree No. 1		
2019 SO_2 Emissions	Modeled Emissions	Status
151.6 lbs/hr	2687.3 lbs/hr 11770.3 TPY, combined stack	No further action needed

Table 5

Wateree No. 2		
2019 SO_2 Emissions	Modeled Emissions	Status
147.3 lbs/hr	2687.3 lbs/hr 11770.34 TPY, combined stack	No further action needed

The data for Wateree is based on actual emissions per actual hours of operation. Since each unit's emissions are measured on one combined stack, the emissions are apportioned by heat rate. The final result is actual pounds/hour.

WAT1SO2:

$$\frac{657.8\ tons}{4717.00\ hrs} x \frac{11511800.6\ mmBtu}{11511800.6\ mmBtu + 9663258.8\ mmBtu} x\ 2000\ lbs = 151.6\ lbs/hr$$

WAT2SO2:

$$\frac{657.8\ tons}{4076.29\ hrs} x \frac{9663258.8\ mmBtu}{11511800.6\ mmBtu + 9663258.8\ mmBtu} x\ 2000\ lbs = 147.3\ lbs/hr$$

The Actual SO_2 emissions in tons per year:

Unit	2018	2019
WAT Unit 1	474.9	357.6
WAT Unit 2	541.6	300.2

The reduction in emissions from 2018 to 2019 is due to a reduction of coal consumption (i.e. less unit operation).

<u>New-Indy Catawba (New-Indy), formerly Resolute, York County</u>

The New-Indy 1-hr SO_2 DRR modeling was based on permit allowable SO_2 emissions with the exception that No. 6 fuel oil combustion emissions were based on actual No. 6 fuel oil use at maximum permitted sulfur content. The information used in the assessment (shown in Table 6) for this facility shows that no further modeling is warranted.

Table 6

New-Indy (Resolute) Facility No. 6 Fuel Oil Use			
2018 fuel oil used	2019 fuel oil used	Modeled usage:	Status
1,677,048 gallons	1,330,372 gallons	4,041,888 gallons	No further action needed

The primary sources of SO_2 at New-Indy Catawba LLC (Catawba Mill) are No. 6 fuel oil combustion for process steam generation and incineration of pulp mill non-condensable gases (NCG's) in the combination boilers. The SO_2 DRR modeling for the Catawba Mill was performed using the actual hourly No. 6 fuel oil usage during calendar years 2012 - 2014 year assuming the maximum fuel oil sulfur content (2.1%) as a conservative assumption. The combustion of pulp mill NCG's was modeled at the pulp mill design capacity and the permitted SO_2 emission rate of 10.1 pounds SO_2 per air dried ton pulp (lb SO_2/ ADTP). Other minor sources of SO_2 at the Catawba Mill (biomass and natural gas combustion, etc.) were modeled at the maximum short-term permitted emission rates.

The 2018 and 2019 actual SO_2 emissions are compared to the modeled SO_2 emissions in Tables 7 and 8 and are less than one-half the modeled emissions rates in 2012, 2013, and 2014. As shown in Table 7, the annual SO_2 emissions from No. 6 fuel oil are based on the total fuel oil usage and the average fuel oil sulfur content. The annual SO_2 emissions from pulp mill NCG combustion are based on the total pulp production and the actual NCG emissions factor per ton of production. The annual emissions for NCG combustion are over-reported in the 2018 EIS. The permitted pulp production was applied to the source-specific actual SO_2 emissions factor instead of the actual 2018 pulp production. The 2019 EIS emissions from NCG combustion are similarly over-reported. This oversight will be corrected in future emissions inventories to avoid over-reporting the total SO_2 emissions from the facility.

The highest actual hourly emissions rate is compared to the highest modeled hourly emissions rate in Table 8. The highest actual hourly emissions in 2018 and 2019 from burning No. 6 fuel oil combined with the highest hourly emissions from pulp mill NCG combustion are less than the highest hourly emissions modeled in 2012, 2013, or 2014. When the 2018 and 2019 actual emissions are paired in time, the highest hourly emissions are 1,575 pounds per hour in 2018 and 1,234 pounds per hour in 2019. To be conservative, the highest actual hourly emissions from burning No. 6 fuel oil in 2018 and 2019 were combined with the highest actual hourly emissions from pulp mill NCG combustion for 2018 and 2019; these results are found in Table 8. In

reality, these two functions are related but not solely dependent upon each other. This means that the highest hourly emissions from burning No. 6 fuel oil and the highest hourly emission from pulp mill NCG combustion did not occur at the same time (e.g. during the same hour of the year). When accounting for this, the highest actual hourly SO_2 emissions are 1,575 pounds per hour for 2018 and 1,234 pounds per hour for 2019. The 2018 and 2019 highest actual hourly emissions are between 41% and 79% of the highest hourly modeled SO_2 emissions.

As shown in both Tables 7 and 8 the actual emissions during 2018 and 2019 are well below the maximum modeled SO_2 1-hour emissions rates.

Table 7 – Comparison of Annual SO_2 Emissions

Year	No. 6 Fuel Oil			Pulp Mill NCG Combustion			Sum
	Gallons	% S	tons SO_2	ADTP	lb SO_2/ADTP	tons SO_2	tons SO_2
2012 Model	1,566,028	2.1	258	666,125	10.1	3,364	3,622
2013 Model	1,230,464	2.1	203	666,125	10.1	3,364	3,567
2014 Model	4,041,888	2.1	666	666,125	10.1	3,364	4,030
2018 Actual	1,677,048	1.69	222	379,371	6.76	1,282	1,505
2019 Actual	1,330,272	1.84	192	385,101	6.76	1,302	1,494

Table 8 – Comparison of Maximum Hourly SO_2 Emissions

Year	No. 6 Fuel Oil			Pulp Mill NCG Combustion			Sum
	max gallons/hr	% S	lbs SO_2/hr	max ADTP/hr	lb SO_2/ADTP	lbs SO_2/hr	lbs SO_2/hr
2012 Model	6,696	2.1	2,208	76.0	10.1	768	2,976
2013 Model	3,746	2.1	1,235	76.0	10.1	768	2,003
2014 Model	6,086	2.1	2,007	76.0	10.1	768	2,775
2018 Actual	5,386	1.69	1,429	67.8	6.76	459	1,888

Year	No. 6 Fuel Oil			Pulp Mill NCG Combustion			Sum
	max gallons/hr	% S	lbs SO_2/hr	max ADTP/hr	lb SO_2/ADTP	lbs SO_2/hr	lbs SO_2/hr
2019 Actual	3,829	1.84	1,106	75.8	6.76	512	1,618

Santee Cooper Cross Generating Station (Cross Station), Berkeley County

Cross Station used actual SO_2 emission data using Part 75 hourly emissions data from years 2012-2014 paired with corresponding 2012-2014 hourly meteorological data for their modeling demonstration. Emission data from 2019 along with modeled emission rates are shown in Table 9. Annual average SO_2 emissions for Cross Station for the 2012 – 2014 timeframe were 6760.9 tons. Annual SO_2 emissions from Cross for 2018 and 2019 were significantly less than the average modeled rate at 3560.1 tons (2018) and 3538 tons (2019).

Table 9

Cross Station Coal Units 1-4					
Unit	**Modeled SO_2 emission rates (lbs/hr)**	**2019 Maximum Hourly SO_2 Emission Rates (lbs/hr)**	**Modeled Average Hourly Emission Rates (lbs/hr)**	**2019 Average Hourly SO_2 Emission Rates (lbs/hr)**	**2019 Hours of Operation**
#1	4,236	3,593.2	280	385.2	6,008
#2	2,935	2,973.2	370	434.5	618
#3	8,571	4,021.3	409	296.1	8,064
#4	3,567	7,481.5	483	285.2	7,133
Total	19,309	18,069.2	1,542	1,401	N/A

In the Cross DRR modeling, a refined approach of determining seasonal SO_2 background concentrations (in accordance with EPA guidance) was used instead of using an annual design value concentration for the background concentration. This discussion is located in section 6.5 of the 2017 DRR Report. The modeled impacts, including the seasonal background concentrations, were tabulated separately with the highest ten values listed in Table 7-1 of the Report, with a worst-case design value of 87.7 µg/m^3 (or about 45% of the NAAQS).

Unit 2's 2019 maximum one-hour emission rate (2,973.2 lb/hr) is slightly above the modeled maximum emission rate used in the DRR air dispersion modeling (2,935

lb/hr). Unit 4's 2019 maximum one-hour emission rate (7,481.5 lb/hr) is also above the modeled maximum emission rate used in the air dispersion modeling (3,567 lb/hr). The combined effect of the emissions increases for both Unit 2 and Unit 4 can be estimated by scaling up the combined increase. The scaled-up concentration for this combined increase would be 141.0 μg/m^3 (87.7 * (2973.2+7481.5)/(2935+3567)). Although the original modeling result included seasonal background concentrations, it was discovered after the original DRR modeling was submitted that the data the seasonal concentrations were based on did not meet EPA completeness criteria. Thus, in order to ensure the total 1-hour SO_2 design value did not underestimate the background contributions, a separate updated design value based on complete data for the 2014-2016 period was conservatively added to the modeled result. For this reporting period, it is appropriate to add the 2017-2019 design value of 39.3 μg/m^3 for the Jenkins Avenue station (same station as used in the original DRR modeling) to the scaled-up concentration. Thus, the scaled-up concentration plus background is 141.0 + 39.3 = 180.3 μg/m^3, or 92% of the 1-hour SO_2 NAAQS. This calculation is conservative in that the seasonal background concentrations are also included in the ratio calculation and then a conservative design value concentration is added to the scaled-up result, essentially double-counting the background concentrations. In addition, this calculation also ignores the significant decreases in the maximum one-hour emissions for Units 1 and 3.

Unit 1's 2019 annual average emission rate (385.2 lb/hr) was higher than the unit's modeled annual average emission rate (280 lb/hr). Unit 2's 2019 annual average emission rate (434.5 lb/hr) was also higher than the unit's modeled annual average emission rate (370 lb/hr). However, the sum of the average emissions for all units for 2019 (1401 tons) is less than the sum of the modeled average emissions (1542 tons) in the DRR modeling.

Thus, this analysis of the DRR modeling results and modeled emissions compared to the current SO_2 emissions data indicates the conclusions drawn from the original modeling analysis are still valid and updated modeling for the 1-Hour SO_2 NAAQS is not needed.